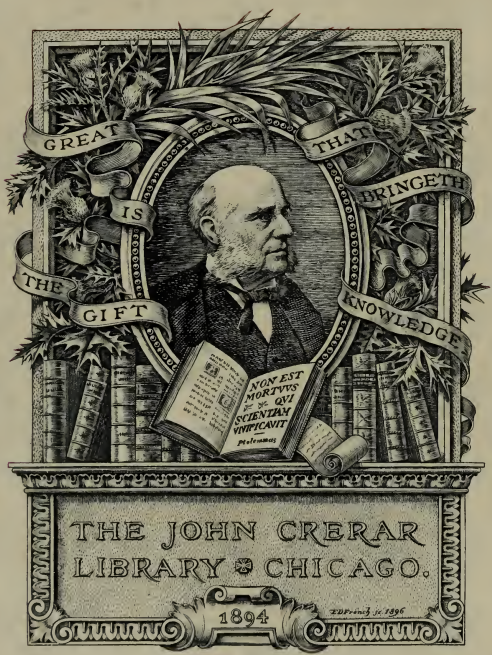


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Vol. VI. No. 1.

BULLETIN OF THE
UNIVERSITY OF KANSAS.

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# CATALOGUE

## 1904-'05.

Lawrence, Kan.

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JOHN CRERAR
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# Thirty-ninth

# Annual Catalogue

OF

# The University of Kansas

## For the Year 1904-'05,

AND

## Announcements for 1905-'06.

Lawrence, Kansas,

April 1905.

SM. K.

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## Office Hours.

THE CHANCELLOR OF THE UNIVERSITY,
Room 4, Fraser Hall,
9 A. M. to 12 M. and 1:30 to 4 P. M.

THE SECRETARY OF THE UNIVERSITY,
Room 9, Fraser Hall,
8:30 A. M. to 5 P. M.

THE REGISTRAR OF THE UNIVERSITY,
Room 9, Fraser Hall,
8 A. M. to 12 M. and 1:30 to 5 P. M.

THE DIRECTOR OF THE SUMMER SCHOOL,
Room 9, Fraser Hall,
Tuesdays and Thursdays, 9 to 10 A. M.

THE DEAN OF THE GRADUATE SCHOOL,
Room 13, Fraser Hall,
9 to 10 A. M.

THE DEAN OF THE COLLEGE OF LIBERAL ARTS AND SCIENCES,
Room 1, Fraser Hall,
10:15 A. M. to 12:15 P. M.

THE DEAN OF THE SCHOOL OF ENGINEERING,
Room 33, Fraser Hall,
First Term, 10:15 to 11:15 A. M.
Second Term, 11:15 A. M. to 12:15 P. M.

THE DEAN OF THE SCHOOL OF LAW,
Law Building,
9 to 10 A. M.

THE DEAN OF THE SCHOOL OF FINE ARTS,
North College,
11 A. M. to 12 M.

THE DEAN OF THE SCHOOL OF PHARMACY,
2d floor, Pharmacy Building,
10 to 11 A. M.

THE ACTING DEAN OF THE SCHOOL OF MEDICINE,
2d floor, Snow Hall,
11 A. M. to 12 M.

# Calendar.

### Academic Year 1904-'05.

Jan. 9, Monday — Christmas recess ends.
Jan. 23 to 27, Monday to Friday inclusive — Semiannual examinations.
Jan. 30, Monday — Second term begins.
March 29, Wednesday — First half-term ends.
March 30 to April 3, Thursday, Friday, and Monday — Spring recess.
April 4, Tuesday — Second half-term begins.
May 2, Tuesday — Spring concert by University Mandolin Club.
May 16, Tuesday — Spring concert by University Orchestra.
May 29 to June 2, Monday to Friday, inclusive — Annual examinations.
June 1, Thursday — Commencement concert by Music department, School of Fine Arts.
June 4, Sunday, 8 P. M. — Baccalaureate sermon.
June 5, Monday, 8 P. M. — Phi Beta Kappa address.
June 6, Tuesday, 10:30 A. M. — Annual Alumni address.
June 6, Tuesday, 8 P. M. — Chancellor's reception.
June 7, Wednesday, 10 A. M. — Commencement exercises.
June 8, Thursday — Opening of Summer Session.

### Academic Year 1905-'06.

Sept. 6, Wednesday — First term begins.
Sept. 6, 7, 8, and 9, Wednesday, Thursday, Friday, and Saturday — Examination of candidates for admission, and presentation of certificates from high schools, academies, and other institutions.
Sept. 8, Friday — General assembly of students and annual address, in University Hall, at 10 A. M.
Nov. 9, Thursday — Second half-term begins.
Nov. 21, Tuesday — Winter concert by University Orchestra.
Nov. 23, Thursday — Winter concert by University Glee and Mandolin Clubs.
Nov. 30, December 1 and 4, Thursday, Friday, and Monday — Thanksgiving recess.
Dec. 12, Tuesday, 8 P. M. — Christmas concert by Music department, School of Fine Arts.
CHRISTMAS RECESS — Saturday, December 23, to Monday, January 8, inclusive.
Jan. 8, Monday — Christmas recess ends.
Jan. 22 to 26, Monday to Friday, inclusive — Semiannual examinations.
Jan. 29, Monday — Second term begins.
March 28, Wednesday — First half-term ends.
March 29 to April 2, Thursday, Friday, and Monday — Spring recess.
April 3, Tuesday — Second half-term begins.
May 3, Thursday — Spring concert by University Glee and Mandolin Clubs.
May 15, Tuesday — Spring concert by University Orchestra.
May 28 to June 1, Monday to Friday, inclusive — Annual examinations.
May 31, Thursday — Commencement concert by Music department, School of Fine Arts.
June 3, Sunday, 8 P. M. — Baccalaureate sermon.
June 4, Monday, 8 P. M. — Sigma Xi address.
June 5, Tuesday, 10:30 A. M. — Annual Alumni address.
June 5, Tuesday, 8 P. M. — Chancellor's reception.
June 6, Wednesday, 10 A. M. — Commencement exercises.

# 1904.

## JULY.

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## Chronological Table.

1861.—Congress set apart and reserved for the use and support of a State University seventy-two sections of land.
1863.—Lawrence selected as location for the University of Kansas.
1864.—The University organized by the legislature.
1865.—March 31, first meeting of the Board of Regents.
1866.—July 19, Regents elected the first faculty of the University, consisting of Francis Huntington Snow, A. M., David Hamilton Robinson, A. M., and Elial Jay Rice, A. M.
1866.—North College erected.
1866.—September 12, first session of the University opened at North College.
1870.—Department of Engineering organized.
1872.—Fraser Hall erected.
1876.—Normal Department established.
1877.—Department of Music organized.
1878.—Department of Law organized.
1883.—Medical Hall (Old Chemistry Building) erected.
1885.—Department of Pharmacy established.
1885.—Normal Department discontinued.
1886.—Snow Hall erected.
1891.—The Preparatory Department discontinued, the work being left to the high schools of the state.
1891.—The University reorganized and Schools of Arts, Engineering, Law, Fine Arts and Pharmacy established.
1894.—Spooner Library erected.
1894.—Chancellor's residence erected.
1895.—Blake Hall erected.
1896.—The Graduate School established.
1899.—The Fowler Shops erected.
1899.—The School of Medicine established.
1900.—Chemistry and Pharmacy Building erected.
1902.—Natural History Museum Building erected.
1904.—The name of the School of Arts changed to the College of Liberal Arts and Sciences.
1904.—Law Building erected.
1905.—Auditorium-Gymnasium erected.

## General Information.

*The General Catalogue of the University of Kansas* is issued in the spring of each year, usually in April. A copy will be sent free to any one desiring it.

*Separate Catalogues* of the SCHOOLS OF THE UNIVERSITY will be issued at the same time with the General Catalogue of the University. Separate catalogues will give complete information as to each school or department of the University. Prospective students of the School of Engineering, the School of Law, the School of Pharmacy, the School of Fine Arts, the School of Medicine, the Graduate School or the Summer Session will ask for the separate catalogue of the desired School. They are issued free of cost.

*The Alumni Catalogue* of the University is issued at intervals, giving a list of the graduates of the University. A new issue has just come from the press. They are free to graduates and former students of the University.

*The University Calendar* is posted weekly upon the local bulletin board, announcing lectures, concerts, prizes, and other matters of public interest under the auspices of the University, and as soon as possible will be printed in sufficient numbers for distribution, on request, to high schools of the state and to graduates and former students.

For catalogues and other information, address.

THE UNIVERSITY OF KANSAS, Lawrence, Kan.

# PART I.

# Officers of the University.

# The Board of Regents.

CHANCELLOR FRANK STRONG, Lawrence.....*Ex officio.*
HON. SCOTT HOPKINS, Horton.....Term expires 1907
HON. FRANK G. CROWELL, Atchison..... " " 1907
HON. THOMAS W. BUTCHER, Wellington..... " " 1907
HON. THOMAS M. POTTER, Peabody..... " " 1909
HON. ALEXANDER C. MITCHELL, Lawrence, " " 1909
HON. WILLIAM A. WHITE, Emporia..... " " 1909

### Officers of the Board.

CHANCELLOR FRANK STRONG ....*President, ex officio.*
THOMAS M. POTTER.....*Vice-president.*
FRANK G. CROWELL.....*Secretary.*

### Committees of the Board.

*Instruction:*
Messrs. CROWELL, BUTCHER, AND WHITE.

*Library and Apparatus:*
Messrs. BUTCHER, POTTER, AND MITCHELL.

*Finance:*
Messrs. WHITE, POTTER, AND CROWELL.

*Buildings, Grounds, and Supplies:*
Messrs. POTTER, HOPKINS, AND MITCHELL.

*University Lands and Endowments:*
Messrs. MITCHELL, WHITE, AND CROWELL.

*Reports and Publications:*
Messrs. BUTCHER, POTTER, AND HOPKINS.

*Auditing of Accounts:*
Messrs. HOPKINS, WHITE, AND MITCHELL.

# Administrative Officers.

### The University.

FRANK STRONG, PH. D., Chancellor.
WILLIAM H. CARRUTH, PH. D., Vice-president of the Faculty.
WILLIS K. FOLKS, Secretary and Purchasing Agent.
GEORGE O. FOSTER, A. B., Registrar.
WILLIAM H. JOHNSON, A. M., High-school Visitor.
EBEN F. CROCKER, Superintendent of Buildings and Grounds.

### The Schools.

FRANK W. BLACKMAR, PH. D., Dean of the Graduate School.
OLIN TEMPLIN, A. M., Dean of College of Liberal Arts and Sciences.
FRANK O. MARVIN, A. M., Dean of the School of Engineering.
JAMES W. GREEN, A. M., Dean of the School of Law.
CHARLES S. SKILTON, A. B., Dean of the School of Fine Arts.
LUCIUS E. SAYRE, B. S., PH. M., Dean of the School of Pharmacy.
CLARENCE E. MCCLUNG, PH. D., Acting Dean of School of Medicine.
WILLIAM H. CARRUTH, PH. D., Director of the Summer Session.

### The Library and Gymnasium.

CARRIE M. WATSON, A. B., Librarian.
JAMES NAISMITH, A. B., M. D., Director of Gymnasium.

### The Museums.

FRANK STRONG, PH. D., *ex officio* Director of the Museums.
FRANCIS H. SNOW, PH. D., LL. D., Curator of the Entomological Collections.
LEWIS L. DYCHE, A. M., M. S., Curator of the Mammals, Birds, and Fishes.
CLARENCE E. MCCLUNG, PH. D., Curator of the Vertebrate Paleontological Collections.
ERASMUS HAWORTH, PH. D., Curator of the Geological and Mineralogical Collections.
WILLIAM C. STEVENS, M. S., Curator of the Herbarium.
ALEXANDER M. WILCOX, PH. D., Curator of the Classical Museum.

### The University Geological Survey of Kansas.

FRANK STRONG, PH. D., Director, *ex officio*.
ERASMUS HAWORTH, PH. D., Superintendent and Geologist.
EDGAR H. S. BAILEY, PH. D., Chemist.

## The University Council.

THE CHANCELLOR OF THE UNIVERSITY, *Chairman.*

PROF. WILLIAM CHASE STEVENS, *Secretary.*

Professors and Heads of Departments of the Schools of the University.

## The Faculties.

The Faculty of each School is made up of those giving instruction in that School.

Each Faculty is the legal governing body in all matters connected *exclusively* with that School.

# Officers of Instruction and Administration.

The officers of instruction and administration in the University are divided into the following groups:

PROFESSORS.
ASSOCIATE PROFESSORS.
ASSISTANT PROFESSORS.
INSTRUCTORS.
ASSISTANT INSTRUCTORS.
LIBRARIAN AND ASSISTANTS.
BUSINESS AND EXECUTIVE OFFICERS.
FELLOWS AND SCHOLARS.

## Professors.

FRANK STRONG.
A. B., 1884, A. M., 1893, PH D., 1897, (Yale).
*Chancellor of the University, and President of the Faculties*, 1902.* (4 F.†) 1318 Louisiana St.

WILLIAM HERBERT CARRUTH.
A. B., 1880, (University of Kansas).
A. M., 1889, PH. D., 1893, (Harvard).
*Vice-president of the Faculty, Director of the Summer Session, and Professor of Germanic Languages and Literatures*, 1882; 1879. (28 F.) 1342 Louisiana St.

FRANCIS HUNTINGTON SNOW.
A. B., 1862, A. M., 1865, PH. D., 1881, (Williams).
LL. D., 1890, (Princeton).
*Professor of Organic Evolution, Systematic Entomology, and Meteorology*, 1901; 1866. (Mu.) 1345 Louisiana St.

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*The date after each title indicates the year of appointment to the present rank; a second date denotes the year of first appointment in the University, when that fact is not indicated by the first date.

†Abbreviations: C = Chemistry Building. F = Fraser Hall. L = Spooner Library. M = Medical Hall. Mu = Museum of Nat. Hist. N = North College. B = Blake Hall. S = Snow Hall. Sh = Fowler Shops. D = Dick Building Studios. L B = Law Building.

EPHRAIM MILLER.
A. B., 1855, A. M., 1858, PH. D., 1895, (Allegheny).
*Professor of Mathematics and Astronomy*, 1875; 1874.
(23 and 25 F.) 1244 Tennessee St.

JAMES WOODS GREEN.
A. B., 1866, A. M., 1886, (Williams).
*Dean of the School of Law, and Professor of Law*, 1878.
(L. B.) 637 Tennessee St.

FRANK OLIN MARVIN.
A. B., 1871., A. M., 1874, (Allegheny).
*Dean of the School of Engineering, and Professor of Civil Engineering*, 1882; 1875. (33 F.) 1603 Massachusetts St.

EDGAR HENRY SUMMERFIELD BAILEY.
PH. B., 1873, (Yale).
PH. D., 1883, (Illinois Wesleyan).
*Professor of Chemistry and Metallurgy, and Director of Chemical Laboratories*, 1883. (C.) 1329 Ohio St.

ALEXANDER MARTIN WILCOX.
A. B., 1877, PH. D., 1880, (Yale).
*Professor of Greek Language and Literature*, 1885.
(18 F.) 1605 Vermont St.

LUCIUS ELMER SAYRE.
B. S., 1897, (Michigan University).
PH. G., 1866, PH. M., 1896, (Philadelphia).
*Dean of the School of Pharmacy, and Professor of Pharmacy*, 1885. (C.) 1323 Ohio St.

LUCIEN IRA BLAKE.
A. B., 1877, (Amherst).
PH. D., 1884, (Berlin).
*Professor of Physics and Electrical Engineering*, 1887.
(2d floor, B.) New Eldridge.

LEWIS LINDSAY DYCHE.
A. B., B. S., 1884, A. M., 1886, M. S., 1888, (University of Kansas).
*Professor of Systematic Zoology*, 1889; 1883.
(Mu.) 1611 Massachusetts St.

FRANK WILSON BLACKMAR.
PH. D., 1889, (Johns Hopkins).
*Dean of the Graduate School, and Professor of Sociology and Economics*, 1889. (13 F.) 1115 Ohio St.

CHARLES GRAHAM DUNLAP.
A. B., 1883; A. M., 1899, (Ohio Wesleyan).
LITT. D., 1892, (Princeton).
*Professor of English Literature*, 1890; 1887.
(14 F.) 925 Kentucky St.

CARL ADOLPH PREYER,* (Vienna).
*Professor of Piano, Counterpoint, Canon, and Fugue*, 1892
(N.) 1136 Louisiana St.

OLIN TEMPLIN.
A. B., 1886, A. M., M. S., 1890, (University of Kansas).
*Dean of the College of Liberal Arts and Sciences, and Professor of Philosophy*, 1893; 1886. (3 F.) 1025 Missouri St.

EDWIN MORTIMER HOPKINS.
A. B., 1888, PH. D., 1894, (Princeton).
*Professor of Rhetoric and English Language*, 1893; 1889.
(22 F.) 1201 Tennessee St.

FRANK HEYWOOD HODDER.
A. B., 1883, PH. M., 1883, (Michigan University).
*Professor of American History and Administration*, 1893; 1891. (13 F.) 1115 Louisiana St.

ERASMUS HAWORTH.
B. S., 1881, M. S., 1884, (University of Kansas).
PH. D., 1888, (Johns Hopkins).
*Professor of Geology, Mineralogy, and Mining, and Superintendent of the Geological Survey*, 1894; 1892.
(S.) 1503 Massachusetts St.

ARTHUR TAPPAN WALKER.
A. B., 1887, (University of New York City).
A. M., 1892, (Vanderbilt).
PH. D., 1898, (Chicago).
*Professor of Latin Language and Literature*, 1897.
(17 F.) 1647 Louisiana St.

WILLIAM CHASE STEVENS.
B. S., 1885, M. S., 1893, (University of Kansas).
*Professor of Botany*, 1899; 1889. (9 and 10 S.) 1121 Louisiana St.

ARVIN SOLOMON OLIN.
A. B., 1892, (Ottawa University).
A. M., 1894, (University of Kansas).
*Professor of Education*, 1899; 1893. (12 F.) 1134 Louisiana St.

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* Leave of absence, spring term, 1904-'05.

WILLIAM ALEXANDER GRIFFITH.
(Jullien Art School, Paris.)
*Professor of Drawing and Painting*, 1899.
(S.) 1144 Indiana St.

EUGÉNIE GALLOO.
B. L., 1892, (University of Michigan).
Académie de Paris, Brevet, 1881, Sorbonne, 1884, (University of France).
A. M., 1895, (University of Kansas).
*Professor of Romance Languages and Literatures*, 1900; 1892. (27 F.) 1324 Louisiana St.

WILBUR CORTEZ ABBOTT.
A. B., 1892, A. M., 1903, (Wabash College).
B. Litt., 1897, (Oxon.)
*Professor of European History*, 1902.
(11 F.) 1116 Louisiana St.

WILLIAM LIVESEY BURDICK.
A. B., 1882, A. M., 1884, (Wesleyan).
Ph. D., 1885, (Grant).
LL B., 1898, (Yale).
*Professor of Law*, 1902; 1898. (L. B.) Jackson Block.

CHARLES SANFORD SKILTON.
A. B., 1889, (Yale).
*Dean of the School of Fine Arts, and Professor of Musical Theory and Organ*, 1903. 947 Louisiana St.

CHARLES EDWARD HUBACH.
(Graduate of the New England Conservatory of Music.)
*Professor of Voice*, 1903. (N.) 1232 Louisiana St.

JOHN ELOF BOODIN.
A. B., 1895, A. M., 1896, (Brown).
Ph. D., 1899, (Harvard).
*Professor of Philosophy*, 1904. (12 F.) 1026 Ohio St.

## Associate Professors.

HENRY BYRON NEWSON.
B. S., 1883, PH. D., 1892, (Ohio Wesleyan).
*Associate Professor of Mathematics*, 1892; 1890.
(24 F.) 1702 Massachusetts St.

JAMES NAISMITH.
A. B., 1887, (McGill University).
M. D., 1898, (Gross Medical College).
*Associate Professor of Physical Education, and Chapel Director*, 1898. (Basement, S.) 1108 Tennessee St.

MARSHALL ALBERT BARBER.
A. B., 1891, (University of Kansas).
A. M., 1894, (Harvard).
*Associate Professor of Cryptogamic Botany and Bacteriology*, 1899; 1895. (M.) (9 S.) 1136 Louisiana St.

SAMUEL JOHN HUNTER.
A. B., 1893, A. M., 1893, (University of Kansas).
*Associate Professor of Entomology*, 1899; 1896.
(6 and 7 S.) 1309 Ohio St.

EDWARD BARTOW.
A. B., 1892, (Williams).
PH. D., 1895, (Goettingen).
*Associate Professor of Chemistry*, 1899; 1897.
(C.) 1344 Ohio St.

IDA HENRIETTA HYDE.
B. S., 1891, (Cornell).
PH. D., 1896, (Heidelberg, Germany).
*Associate Professor of Physiology*, 1899.
(M.) 1229 Tennessee St.

MILES WILSON STERLING.
A. B., 1883, A. M., 1893, (University of Kansas).
*Associate Professor of Greek*, 1901; 1883.
(18 F.) 1129 Louisiana St.

RAPHAEL DORMAN O'LEARY.
A. B., (University of Kansas, 1893; Harvard, 1895).
*Associate Professor of English*, 1901; 1896.
(22 F.) 1106 Louisiana St.

WILLIAM EDWARD HIGGINS
B. S., 1888, LL. B., 1894, (University of Kansas).
*Associate Professor of Law*, 1901; 1899.
(L. B.) 1024 Ohio St.

CLARENCE ERWIN McCLUNG.
PH. G., 1892, A. B., 1896, A. M., 1898, PH. D., 1902, (University of Kansas).
*Acting Dean of the School of Medicine, and Associate Professor of Zoology*, 1901; 1897. (M.) 1301 Ohio St.

GEORGE HOWARD HOXIE.
A. B., 1893, A. M., 1896, (Union University).
M. D., 1901, (University of Zurich).
*Associate Professor of Anatomy*, 1902. 900 Tennessee St.

WILLIAM HAMILTON JOHNSON.
A. B., 1885, A. M. 1892, (University of Kansas).
*Associate Professor, and High-school Visitor*, 1903.
(3 F.) 1201 Oread Ave.

WILLIAM WITHERLE LAWRENCE.
A. B., 1898, (Bowdoin).
PH. D., 1903, (Harvard).
*Associate Professor of English Literature*, 1903.
(22 F.) 1104 Tennessee St.

HOWARD DRYSDALE HESS.
M. E., 1896, (Lehigh).
*Associate Professor of Mechanical Engineering*, 1904.
(Sh.) 1325 Tennessee St.

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## Assistant Professors.

HANNAH OLIVER.
A. B., 1874, A. M., 1888, (University of Kansas).
*Assistant Professor of Latin*, 1890. (17 F.) 802 Tennessee St.

MARTIN EVERETT RICE.
B. S., 1891, M. S., 1893, (University of Kansas).
*Assistant Professor of Physics and Electrical Engineering*, 1892. (1st floor, B.) 1223 Vermont St.

ELMER FRANKLIN ENGEL.
A. B., 1892, (University of Kansas).
A. M., 1898, (Harvard).
*Assistant Professor of German*, 1892.
(28 F.) 1211 Kentucky St.

FRANK EMERSON WARD.
(State Normal, Indiana).
*Superintendent of Fowler Shops and Shop Instruction*, 1899; 1889. (Sh.) 1336 Kentucky St.

ARCHIBALD HOGG.
A. B., 1894, LL. B., 1896, (University of Kansas).
*Assistant Professor of Philosophy*, 1899. (12 F.) 1227 Ohio St.

WALTER RICHARD CRANE.
A. B., 1895, A. M., 1896, (University of Kansas).
PH. D., 1901, (Columbia).
*Assistant Professor of Mining Engineering*, 1899.
(Basement, F.) 1546 Massachusetts St.

HAMILTON PERKINS CADY.
A. B., 1897, PH. D., 1903. (University of Kansas).
*Assistant Professor of Chemistry*, 1899.
(C.) 1600 Kentucky St.

RALPH WALDO CONE.
A. B., 1895, (University of Kansas).
A. M., 1897, (Harvard).
*Assistant Professor of Sociology and Economics*, 1899.
(13 F.) 1310 Louisiana St.

GEORGE LUTHER LINCOLN.
A. B., 1896, A. M., 1897, (Harvard).
*Assistant Professor of French*, 1899.
(27 F.) 1345 Louisiana St.

L. D. HAVENHILL.
PH. C., 1893, PH. M., 1894, (Michigan University).
B. S., 1903, (University of Kansas).
*Assistant Professor of Pharmacy*, 1899.
(42 C.) 1609 Vermont St.

WILLIAM CHRISTIAN HOAD.
B. S., 1898. (University of Kansas).
*Assistant Professor of Civil Engineering*, 1900.
(32 F.) 1540 Kentucky St.

ALMA LE DUC.
PH. B., 1899, (University of Chicago).
*Assistant Professor of French and Spanish*, 1900.
(27 F.) 1433 Tennessee St.

CHARLES MORGAN STERLING.
A. B., 1897, (University of Kansas).
*Assistant Professor of Pharmacognosy*, 1901.
(41 C.) 923 Indiana St.

ALBERTA LINTON CORBIN.
A. B., 1893, (University of Kansas).
PH. D., 1902, (Yale).
*Assistant Professor of German*, 1901. (28 F.) 1108 Ohio St.

JOHN NICHOLAS VAN DER VRIES.
A. B., 1896, A. M., 1899, (Hope).
PH. D., 1901, (Clark).
*Assistant Professor of Mathematics*, 1901.
(23 F.) 925 Kentucky St.

FREDERIC NEWTON RAYMOND.
A. B., 1896, (University of Kansas).
A. M., 1897, (Columbia).
*Assistant Professor of English*, 1901.
(22 F.) 811 Mississippi St.

EDGAR GEORGE FRAZIER.
PH. B., 1900, (Tabor), 1901, (University of Chicago).
*Assistant Professor of Public Speaking and Debate*, 1901.
(25, 5th floor, F.) 1219 Kentucky St.

MARGARET LYNN.
B. S., 1889, (Tarkio).
A. M., 1900, (University of Nebraska).
*Assistant Professor of English*, 1901. (22 F.) 1108 Ohio St.

RICHARD McNAMEE FREEMAN.
E. E., 1900, (Lehigh).
*Assistant Professor of Electrical Engineering*, 1901.
(Sh.) 642 Louisiana St.

CARL LOTUS BECKER.
B. L., 1896, (University of Wisconsin).
*Assistant Professor of European History*, 1902.
(11 F.) 802 Mississippi St.

FRANK EGBERT BRYANT.
B. L., 1899, A. M., 1901, (University of Michigan).
*Assistant Professor of English*, 1902.
(22 F.) 1116 Louisiana St.

GEORGE JUSSEN HOOD.
B. S., 1902, (University of Kansas).
*Assistant Professor of Mechanical Drawing*, 1902.
1447 Vermont St.

RALPH EMERSON BASSETT.
A. B., 1889, A. M., 1890, (Harvard).
*Assistant Professor of Romance Languages*, 1903.
(27 F.) 746 Ohio St.

DAVID FORD McFARLAND.
A. B., 1900, A. M., 1901, (University of Kansas).
M. S., 1903, (Yale).
*Assistant Professor of Chemistry*, 1903.
(C.) 929 Connecticut St.

ARTHUR JEROME BOYNTON.
A. B., 1901, (Harvard).
A. M., 1902, (Columbia).
*Assistant Professor of Sociology and Economics*, 1903.
(13 F.) 1309 Ohio St.

CHARLES HAMILTON ASHTON.
A. B., 1887, (Union).
A. M., 1893, (Harvard).
*Assistant Professor of Mathematics*, 1903.
(24 F.) 1240 Rhode Island St.

FREDERICK HILL WOOD.*
A. B., 1897, LL. B., 1899, (University of Kansas).
*Assistant Professor of Law*, 1903. (1 F.) 539 Tennessee St.

GEORGE FREDERICK KAY.
B. S., A. M., 1902, (Toronto).
PH. D., 1904, (Chicago).
*Assistant Professor of Geology and Mineralogy*, 1904.
(Basement, F.) 1724 Massachusetts St.

ROBERT W. CURTIS.
A. B., 1896, (Trinity).
PH. D., 1904, (Yale).
*Assistant Professor of Chemistry*, 1904. (C.) 1227 Ohio St.

ALBERT KEMP HUBBARD.
PH. B., 1901, (Yale).
*Assistant Professor of Civil Engineering*, 1904.
(32 F.) 1129 Louisiana St.

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* Resigned.

CHARLES IVES CORP.
B. S., 1903, (University of Kansas).
*Assistant Professor of Mechanical Engineering.*
(Sh.) 1128 Ohio St.

## Instructors.

GEORGE WILLIS HANSON.
*Forge and Foundry Instructor*, 1899. (Sh.) 1717 Vermont St.

HARRIET GREISSINGER.
Mus. B., 1895, (University of Kansas).
*Instructor in Piano*, 1902. (N.) 940 Indiana St.

ERICH MUENTER.*
A. B., 1899, (University of Chicago).
*Instructor in Germanic Languages and Literatures*, 1901.
(28 F.) 1026 Ohio St.

ADAM FREMONT HENDRIX.
A. B., 1893, A. M., 1894, (Central).
*Instructor in Latin*, 1903. (17 F.) 1130 Tennessee St.

EUGENE SMITH.
M. D., 1876, (Rush).
*Demonstrator in Anatomy*, 1903.
(Basement, S.) 736 Kentucky St.

EDWIN FISKE STIMPSON.
B. S., 1890, (University of Kansas).
*Instructor in Physics Laboratory*, 1903, 1901.
(B.) 926 Indiana St.

FRANK EVERETT JONES.
(Armour Institute).
*Instructor in Carpentry and Pattern-making*, 1903.
(Sh.) 740 Mississippi St.

MARY COOLIDGE FISH.
(Sargent Normal School of Physical Training).
*Instructor in Physical Education*, 1903.
(Basement, S.) 1127 Ohio St.

HERBERT WILLIAM EMERSON.
Ph. C., 1901, B. S., 1902, (University of Michigan).
*Instructor in Pharmacy*, 1903. (25 C.) 1401 Kentucky St.

* Leave of absence, 1904–'05.

LOUIS EUGENE SISSON.
A. B., 1904, (Leland Stanford).
*Instructor in Rhetoric*, 1904. (22 F.) 1126 Kentucky St.

WILLIAM JACOB BAUMGARTNER.
A. B., 1900, A. M. 1901, (University of Kansas).
*Instructor in Zoology and Histology*, 1904.
(S.) 1635 Massachusetts St.

HENRY OTTO KRUSE.
A. B., 1894, A. M. 1903, (University of Kansas).
*Instructor in German*, 1904. (28 F.) 1601 Tennessee St.

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## Assistant Instructors.

ULYSSES SIMPSON GRANT PLANK.
B. S., 1902, (University of Illinois).
*Manager of Athletics, and Assistant Instructor in Physical Education*, 1903. (Basement, S.) 1230 Mississippi St.

LULU GARDNER.
*Assistant Instructor in Rhetoric*, 1903.
(22 F.) 1325 Tennessee St.

HENRY B. MILLER.
A. B., 1904 (Baker University).
*Assistant Instructor in Chemistry*, 1904.
(C.) 1301 Vermont St.

CHARLES G. ROGERS.
PH. D., 1904, (University of California).
*Assistant Instructor in Physiology*, 1904. (M.)

BLANCHE LYONS.
(New England Conservatory of Music).
*Assistant Instructor in Voice*, 1904.
(N.) 936 New Hampshire St.

MAUDE BEATRICE COOKE.
(University of Kansas).
*Assistant Instructor in Piano*, 1904. (N.) 1100 Vermont St.

MAUD MILLER.
MUS. B., 1898, (University of Kansas).
*Assistant Instructor in Piano*, 1904. (N.) 1108 Ohio St.

JULIA RIGHTER.
MUS. B., 1897, (University of Kansas).
*Assistant Instructor in Piano*, 1904. (N.) 1132 Tennessee St.

LOUISE WIEDEMANN.
Mus. B., 1897, (University of Kansas).
*Assistant Instructor in Piano*, 1904.
(N.) 835 Massachusetts St.

LARRY M. PEACE.
A. B., 1901 (University of Kansas).
*Preparator and Demonstrator in the Botanical Laboratory*, 1902. (S.) 1111 Mississippi St.

HANDEL T. MARTIN.
*Museum Assistant in Paleontology*, 1899.
(M.) 1031 Mississippi St.

ELBERT STEPHEN TUCKER.
*Museum Assistant in Systematic Entomology*, 1902.
(M.) 1218 Tennessee St.

LEVERETT ALLEN ADAMS.
A. B., 1903, (University of Kansas).
*Museum Assistant in Zoology*, 1903. (M.) 741 Tennessee St.

WARREN FRED FARAGHER.
*Laboratory Assistant in Chemistry*, 1904.
(C.) 1219 Kentucky St.

## Librarian and Assistants.

CARRIE M. WATSON.
A. B., 1877, (University of Kansas).
*Librarian*, 1887. (L.) 1345 Tennessee St.

EDITH M. CLARKE.
A. B., 1895, (University of Kansas).
*Cataloguer*, 1904. (L.) 1210 Ohio St.

CLARA SCIOTO GILLHAM.
A. B., 1884, (University of Kansas).
*Loan Desk Assistant*, 1904. (L.) 1345 Tennessee St.

MARY MAUD SMELSER.
*Accession Assistant*, 1904. (L.) 940 Kentucky St.

DORA CATHERINE RENN.
*Reference Assistant*, 1899. (L.) 1310 Louisiana St.

ANNETTE LEONARD.
*Reference Assistant*, 1904. (L.) 1316 Kentucky St.

## Business and Executive Officers.

WILLIS K. FOLKS.
*Secretary of the University, and Purchasing Agent.*
(9 F.) West California Road.

GEORGE O. FOSTER.
A. B , 1901, (University of Kansas).
*Registrar of the University.* (9 F.) 1324 Ohio St.

EBEN F. CROCKER.
*Superintendent of Buildings and Grounds.*
(Basement, F.) West of City Limits.

EDWARD E. BROWN.
*Accountant.* (9 F.) 1336 Massachusetts St.

MINNIE MOODIE.
*Secretary to the Chancellor.* (4 F.) Southeast Lawrence.

LENA MARGARET DAVIS.
*Assistant to the Registrar.* (9 F.) 1145 Rhode Island St.

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## Fellows and Scholars.

JAMES ABRAM GARFIELD SHIRK.
A. B. 1901, A. M. 1902, (McPherson College).
*Teaching Fellow in Mathematics*, 1904. 1345 Vermont St.

EDWIN RAYMOND BARRETT.
A. B., 1895. A. M., 1902, (Park College).
*Teaching Fellow in English*, 1904. 1042 Ohio St.

VICTOR ILES.
A. B., 1905, (University of Kansas).
*Fellow in European History*, 1904. 910 Vermont St.

RALPH KALLOCH CRAWFORD.
A. B., 1901, (Ottawa University),
*Fellow in Chemistry*, 1904. 904 Louisiana St.

RALPH WALDO BAHNER.
A. B., 1901, (Lane University).
*Fellow in German*, 1904. 1704 Tennessee St.

AMIDA STANTON.
A. B., 1904, (University of Kansas).
*Fellow in French*, 1904. Southeast Lawrence.

ULYSSES GRANT MITCHELL.
A. B., 1898, (Central Normal College).
*Fellow in Education*, 1904. 1809 Massachusetts St.

CHARLES HARKER RHODES.
A. B., 1904, (University of Kansas).
*Fellow in American History*, 1904. (14 F.) 1408 Tennessee St.

RAY EDWIN MERWIN.
A. B., 1903, (University of Kansas).
*Fellow in Sociology*, 1904. (13 F.) 941 Indiana St.

CAROLINE ELIZABETH JAYCOX.
A. B. 1904 (University of Kansas).
*Sara T. D. Robinson Research Scholar at Marine Biological Laboratory*, 1904.

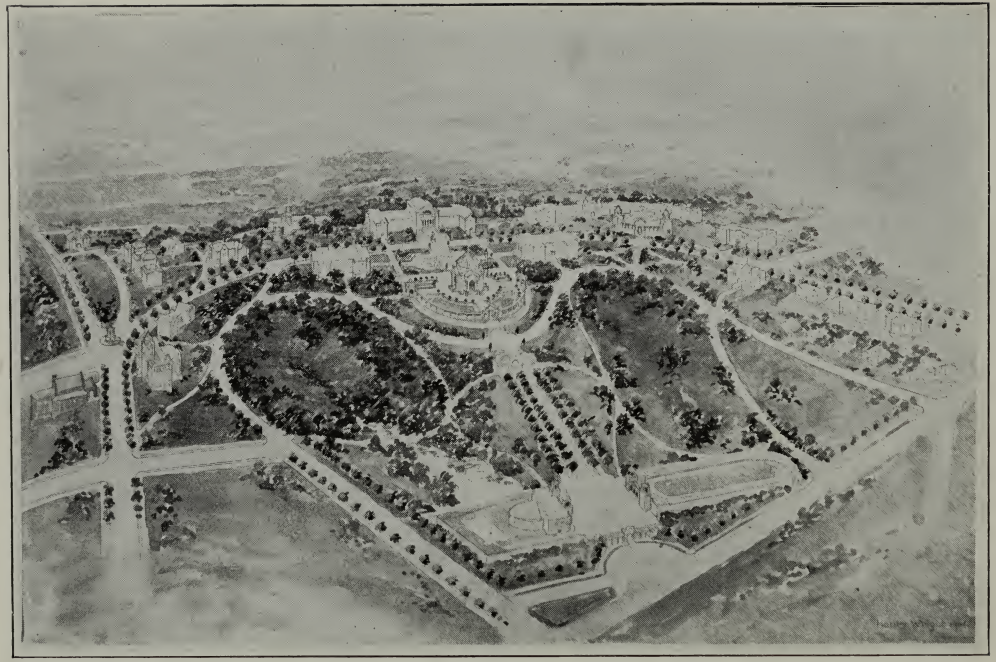
ETHEL HOAR.
*Marcella Howland Memorial Scholar*, 1904.

IRENE CRAWFORD AND LYDIA LINDSEY.
*Lucinda Smith Buchan Memorial Scholar*, 1904.
(The scholarship was doubled for 1904.)

IRENE GILCHRIST.
*Association of Collegiate Alumnæ Scholar*, 1904.

# Part II.

# The University.



# The University.

## Organization.

The work of the University is comprehended in the schools and departments mentioned below. Everything pertaining to the University organization is under the control of the Board of Regents. Each school and department is also under the control of the Chancellor and a separate faculty of instruction.

## Departments of Instruction.

I.—The Graduate School.

II.—The College of Liberal Arts and Sciences.

III.—The School of Engineering.

1. The Civil Engineering Course.
2. The Electrical Engineering Course.
3. The Mechanical Engineering Course.
4. The Mining Engineering Course.
5. The Chemical Engineering Course.

IV.—The School of Law.

V.—The School of Fine Arts.

1. The Course in Piano Playing.
2. The Course in Organ Playing.
3. The Course in Violin Playing.
4. The Course in Voice Culture.
5. The Course in Drawing and Painting.
6. The Course in Elocution.

VI.—The School of Pharmacy.

1. The Short Course in Pharmacy.
2. The Three-year Course in Pharmacy.
3. The Collegiate Course in Pharmacy.

VII.—The School of Medicine.

VIII.—The Summer Session.

**Institutions Connected with the University and under its Control.**

IX.—The Library.

X.—The Gymnasium.

XI.—The Museums.

XII.—The University Geological Survey.

**The Graduate School.** In the College of Liberal Arts and Sciences and the School of Engineering there are advanced courses leading to the degrees of master of arts and science, doctor of philosophy, and the higher engineering degrees. These courses have been organized into a Graduate School, open to graduates of this and, under certain conditions, other universities and colleges.

**The College of Liberal Arts and Sciences.** The College of Liberal Arts and Sciences offers instruction in literature, science, and the arts, leading to the degree of bachelor of arts. It is the central department of the University and the foundation upon which all the rest are built. In it are included many of the courses offered in the other departments of the University, and there is no distinct separation of faculties, nearly all being included in the Faculty of the College of Liberal Arts and Sciences. The courses of study are mainly elective and presume four years of residence work.

**The School of Engineering** offers courses in civil, electrical, mechanical, mining and chemical engineering, leading to the degree of bachelor of science, requiring four years of residence work.

**The School of Law** offers three years of legal instruction, leading to the degree of bachelor of laws.

**The School of Fine Arts** offers courses in piano, organ and violin playing, voice culture, drawing, painting, and elocution.

**The School of Pharmacy** offers two, three and four years' work in pharmaceutical study.

**The School of Medicine** offers a complete four-year medical course. The work of the first two years is done in the laboratories at the University. The work of the second two years is done in the clinical laboratories at Rosedale.

**The Summer Session** (six weeks) is intended to meet the wants of teachers and others who wish to pursue collegiate study but are unable to attend the regular sessions of the University. Collegiate credit is allowed for certain courses offered.

**The Library.** The library of the University is regarded as the center of the instructional life of the University. It is used to supplement the instruction in all departments, and also for wide reading for purposes of general information by students of the University.

**The Gymnasium.** The gymnasium is the center of the physical education of the students in general, and also of the athletics of the University.

**The Museums.** The museums are used for the storing of collections valuable from a scientific point of view, and also for the purpose of supplementing the scientific instruction of the University.

**The Geological Survey.** The Geological Survey is connected with the University only by fact that the director, superintendent and chemist are officers in the University. The work is done by these officers, and especially by the superintendent, with whom almost the entire management rests, without extra compensation. It is regarded as work which the University should do for the state, and the appropriation for the survey is used entirely for the ordinary expenses of the survey.

## Government.

The legislature of 1889 passed an act providing for the government of the University and repealing all former legislation bearing upon the same subject. This act declares that the government of the University shall be vested in a board of seven Regents, six of whom shall be appointed by the governor and confirmed by the senate, and whose term of office shall be four years; that the Board of Regents shall be a body corporate, under the name of "The Regents of the University of Kansas," and as such may sue and be sued, make contracts, and hold and transfer property, both real and personal, for the University.

The Board of Regents is also invested with the power to elect a Chancellor, who shall be the chief officer of the University, and president of the Board of Regents, with the full power of a Regent; to appoint professors, assistants, tutors; to increase and diminish their number as the interest of the University may require; to employ officers and employees, as in their judgment the needs of the University require.

The Board is also empowered to confer such degrees and grant such diplomas as are usually conferred and granted by institutions of learning.

## Discipline.

That the generosity of the state may not be abused, and that perfect justice may be done all who are earnestly striving to make the best possible use of the opportunities offered, there is but a single requirement, *unexceptional deportment and strict attention to University duties.*

## The University and the State.

The University of Kansas is an integral part of the free public-school system of the state. It was established by an act of the legislature of 1864, and its object, as defined by that act, is to "provide the inhabitants of the state with the means of acquiring a thorough knowledge of the various branches of literature, science, and the arts." In realizing the object thus set for it, the University stands in direct connection with the high schools of the state. It begins where the high school ends, and thus completes, for so many as avail themselves of the advantages, the thorough education which the state endeavors to provide. Persons who have completed, in any high school or other institution of learning, the work required in preparation for the University, are admitted to its privileges without examination. For this reason the high schools and academies of the state have in general arranged their courses of study in accordance with the University requirements. Though the University was established and is maintained, primarily, for the sons and daughters of Kansas, it also opens its doors, at very moderate tuition, to the young men and women of other states.

As the head of the public educational system of Kansas, the University endeavors to encourage whatever may contribute to the higher intellectual and moral interests of the state. Believing that the strength and value of the University are measured by its service to the state at large, and wishing to reach as many of the citizens as possible in a helpful and stimulating way, the authorities cordially invite all who desire to pursue courses of study or investigation to connect themselves with the University. All who are seeking special information or self-culture and the highest type of citizen life and influence should feel that, by the generosity of the state, advice and information are freely placed at their command.

## History and Location.

The idea of a State University in Kansas dates from the early days of Kansas territorial government. Each of the constitutions adopted for the territory of Kansas during the period of its memorable struggles provided for the establishment of an institution of higher learning, to be supported by public funds. The last of these, which became, on the admission of Kansas to the Union, the constitution of the state, declares that "provision shall be made by law for the establishment, at some eligible and central point, of a State University, for the promotion of literature and the arts and sciences."

By an act of Congress, approved January 29, 1861, the day on

which Kansas was admitted to statehood, seventy-two sections of land were set apart and reserved for the use and support of a State University. The state accepted the trust, and in 1863 the legislature selected the city of Lawrence as the location for the institution. One year later the legislature passed an act organizing the University and giving to it the name of "The University of Kansas." A charter was immediately drawn up, and the government of the institution was vested in a Board of Regents, appointed by the governor.

The Board thus appointed held its first meeting on March 21, 1865, and decided to open a preparatory department as soon as the citizens of Lawrence should provide rooms for that purpose. This the citizens undertook to do, and by the middle of September, 1866, they were enabled, by the aid of gifts from various individuals and organizations, to erect the building now known as North College. The first Faculty of the University had been elected by the Board of Regents in July of the same year, and on the 12th of September the University was opened to the young men and women of the state.

In 1876 the legislature of the state established a normal department, which, though successful, was discontinued in 1885. The Law School was opened in October, 1878, and the School of Pharmacy was established in 1885. A course in engineering was arranged as early as 1873, but remained a part of the collegiate department until 1891, when the School of Engineering was organized and the collegiate department became known as the School of Arts. During the same year the preparatory department was discontinued, and the departments of music and art were combined to form the School of Fine Arts. The Graduate School was organized in 1896; and in 1899 the preparatory medical course, which had been offered in the collegiate department since 1880, was extended into a regular medical course, constituting the work of the School of Medicine. In 1904 the Board of Regents changed the name of the School of Arts to the College of Liberal Arts and Sciences.

Rev. R. W. Oliver, the first Chancellor of the University, resigned his position after one year of service, and was succeeded by Gen. John Fraser. In 1874 Dr. James Marvin was made Chancellor. His resignation, in 1883, was followed by the election of Dr. Joshua A. Lippincott. Prof. Francis H. Snow, who had been a member of the Faculty from the beginning, was elected Chancellor in 1889. In 1901, on account of failing health, Chancellor Snow resigned. Mr. W. C. Spangler, a graduate of the University and a member of the Board of Regents, was appointed to act as Chancellor until the election of a regular incumbent. Frank Strong, Ph. D., was elected in April, 1902, and assumed the office August 1 of that year.

The University is situated on a projection of the bluffs bordering the Kansas river valley, known as Mount Oread. The view from the campus and buildings includes a broad and varied expanse of valley and upland, dotted with evidences of the productiveness of the soil and the thrift of the people.

Lawrence is a city of about 12,000 inhabitants, and is situated forty miles west of Kansas City. It is a healthful city, and offers many advantages as a place of residence for those desiring the benefits afforded by the University.

## Buildings and Grounds.

The University campus comprises about 160 acres. There are twelve University buildings, eight of which were erected by the state and four by private gifts. Ten of these buildings are used for purposes of instruction, the remaining two being the heating plant and the Chancellor's residence. A gymnasium is in course of erection.

**North College.** This structure was the first building to be erected. It was completed in 1866, from which time until 1872 the entire work of the Univerity was carried on within its walls. In 1872 Fraser Hall was completed, and North College was for a time closed. In 1890 it was again opened, and, until the end of the school year 1893–'94, was used by the School of Law. North College is fifty feet square, three stories high, and contains eighteen rooms. It is at present used by the School of Fine Arts.

**Fraser Hall.** This building was erected in 1872, to better accommodate the growing school and to relieve the crowded rooms of North College. It is 246 feet in extreme length, 98 feet wide in center, wings 62 feet each. There are fifty-four rooms in this building, of which one, the main audience room, containing an electric pipe-organ, is 94 feet long and 56 feet wide. This room has a seating capacity of 1200. There are also in Fraser Hall eighteen lecture-rooms, each large enough to accommodate classes of seventy-five to eighty students. In this building are located the executive offices of the University, including the Chancellor's offices, the office of the Secretary, and the office of the Registrar.

**Medical Hall.** This building is a structure in the form of a T, the main part, extending east and west, being 80 by 35 feet, and the L north of this 40 feet square. The basement is used for work in anatomy. The large, well-lighted room of the second floor is the physiological laboratory. The east wing of this floor is occupied as a lecture-room, and is capable of seating seventy-five students. Other rooms are used for private laboratories, library, etc.

**Snow Hall.** This structure was erected in 1886, from a $50,000 appropriation of the legislature. It is 110 feet in length by 100 feet wide, two stories in height, each 16 feet in the clear, and is provided with an attic of 12 feet, and with an ample basement, almost entirely above ground. The entire basement is now used for the gymnasium. The geological department occupies the two southeast rooms of the first floor. The departments of zoology and botany occupy the large west room of the first floor for laboratory purposes. The entire second floor is devoted to laboratories for advanced work in botany and zoology. The west room of the attic is used for the geological collections. The south room is the botanical museum. The department of drawing and painting occupies the remainder of the attic. On the first floor of the east half is the lecture-room, extending through the basement and first story, and arranged in amphitheater style. This room has accommodations for 200 students.

**Spooner Library.** This building was erected in 1894, at a cost of $75,000, by the generosity of William B. Spooner, of Boston. Its length is 112 feet and extreme width 50 feet. The building is two stories high, with a basement, the greater part of which is above ground. On the first or main floor are located the general reading-room, a newspaper room, and the Librarian's and Cataloguer's offices. The reading-room is admirably arranged and lighted. In the newspaper room are kept the county and city weeklies and dailies published within the state. In addition, dailies published in all the larger cities of the United States are kept on file. The second floor of the building is also devoted to library purposes. In the basement are seminary rooms used for private study of students in the various departments. The building is lighted throughout by electricity. Its every appointment is modern and its facilities and usefulness unexcelled.

**Blake Hall.** This is of Chateau Renaissance style, three stories high, of Cleveland, Ohio, sandstone, and was completed September, 1895, at a cost of $58,000. Besides a general lecture-room seating 100 and two classrooms seating 30 each, and a department reading-room and library, there are two general laboratory rooms, covering 3200 square feet. Accessible to these are supply, battery, workshop, balance and chemical rooms. There are also eight smaller rooms specially adapted for physical research, each provided with water, gas, and electricity, and each basement laboratory room has a stone pier, to bed-rock, giving instrument supports free from vibrations of the building. Heavy electrical currents are so numerous and so planned that to almost any laboratory room all electrical currents from the dynamo station may be delivered. A sixty-cell storage

battery is continually charged for laboratory work. The building is constructed without iron below the third story, to lessen magnetic disturbances. The general apparatus room contains now about $30,000 worth of demonstration and laboratory instruments. The building is heated by the Sturtevant forced-draft system, regulated by electric thermostats in each room. The air is changed automatically every fifteen minutes and in the lecture-room every ten minutes. The total amount of floor space for research purposes is 5690 square feet.

**Fowler Shops.** This building was completed in 1899, at a cost of $21,000, and is the gift of Mr. George A. Fowler, of Kansas City, Mo., as a memorial of his father. It is devoted to the mechanical and technical instruction of the School of Engineering, and to the electric light and power plants of the University. Its present educational equipment represents about $30,000, appropriated by the legislature. The building is of native stone, 224 feet long by 50 feet average width, two stories high, with attic and a handsome tower. It encloses 32,000 square feet of floor space for instructional purposes. It contains boiler- and engine-rooms equipped and adapted for boiler and engine testing, with generators aggregating 200 horse-power, for lighting and power for all the University buildings; forge room, metal- and wood-working departments, dynamo and transformer laboratory, fitted with recent types of appropriate machines, so distributed as to give comprehensive and exact technical instruction. Two rooms, 50 by 30 feet, are devoted to the engineering laboratories of the civil and mechanical departments. The pumping machinery of the water and fire-protection system of the University is also placed in the engine-room.

**The Chemistry and Pharmacy Building.** This building was completed in 1900 at a cost of $70,000. The material used is native limestone, laid in horizontal courses, with recessed pointing. The building is arranged specifically for laboratory purposes for the departments of chemistry and pharmacy. The entire length of the building is 187 feet, and the greatest width 70 feet. The ground plan shows a central portion (devoted to offices, private laboratories, supply-rooms, balance-rooms, and smaller recitation-rooms) and two wings. The building is three stories in height, with a basement of the same height as each of the stories above; beneath the basement floor there is an air space of four feet, down to the solid rock on which the foundations are laid. The system of heating and ventilation, which has been arranged with special care, includes a fan blower, run by electric power, which forces tempered air over steam coils and thence into the laboratories and lecture-rooms. The air

thus brought into the rooms is carried out by hoods on the sides of the rooms, which are connected with nine-inch tiles, terminating in the chimneys above the roof, each hood being ventilated by an independent flue.

**The Natural History Museum Building.** The spacious building for the museum of natural history, which has been erected at a cost of $75,000, furnishes a safe and beautiful home for the natural history collections, estimated to be worth $300,000. The upper floor is devoted to the collection in entomology and paleontology. The remainder of the building is used for the exhibition of mammals and birds. The offices are occupied by the curator of mammals, birds, and fishes, and the curator of the entomological collections. The workrooms of the taxidermist are in the basement.

**The Law Building.** This building, erected at a cost of $65,000, will be occupied by the School of Law in the fall of 1905. The design is a clean composition in the American renaissance. The central figure, which is also the main approach, is in the form of a portico, having fluted columns enriched with Ionic capitals. These, together with the columns, cornice and other ornamental parts, are of gray terra-cotta. The body of the structure is of gray pressed brick. The general dimensions of the building are 60 x 120 feet. Entering the building through the front vestibule, which is marble paved, a few broad steps lead to the main floor, while on either side are ample stairways leading to the basement. On this floor are a large lecture-room, trial court- and study-rooms, toilet- and cloak-rooms. On the next floor are large classrooms, the offices of the Dean and members of the Faculty, and additional cloak-rooms. The second story, which is reached by broad stairways, is practically given over to the library and reading-room, which is about 40 x 116 feet, with a high coved ceiling, giving a free story of nearly twenty-two feet. Adjoining this room, and, in part, directly connected with it, are small study-rooms and private offices. The interior finish of the building above the basement is of quarter-sawed oak, with paneled wainscot in the halls and up the stairs.

**Auditorium-Gymnasium Building.** The legislature of 1905 appropriated $100,000 for a building for a gymnasium and auditorium. The work of construction will begin in July, 1905. Plans have been suggested for a building 100 x 150 feet, three stories, including the basement. The basement will be arranged for locker-rooms, baths, dressing-rooms for the athletic teams, a baseball cage, and a swimming-pool. The first story will contain a gymnasium floor for boys and another for girls, a trophy- and reception-room, and

rooms for boxing, fencing, wrestling, and other exercise. The second-story floor will be clear the full size of the building, with a running track and gallery. When the apparatus is removed, this floor will be used for auditorium purposes, and will seat 3000 people. The arrangement and equipment will be modern in every particular, and will be one of the finest gymnasiums in the West.

# University Organizations.

## Religious.

**Chapel Exercises.** Exercises are held in the University chapel every morning from 10 to 10:15. Though attendance is not required of students, all are cordially invited, and the services are made as attractive and profitable as possible. They consist of the doxology, Scripture reading, prayer, a hymn, and occasional addresses by the Chancellor and others. On Friday morning the chapel exercises are held from 10 to 10:30, at which addresses are given by speakers from abroad or by members of the Faculty of the University. During the academic year of 1904–'05 addresses were delivered by Gov. Edward W. Hoch, Hon. J. N. Dolley, Hon. U. S. Griffin, Hon. F. D. Smith, Hon. G. W. Plummer, Hon. T. A. Noftzger, Hon. Geo. Innes, Hon. H. M. Culter, Hon. E. A. Shepardson, Hon. Chas. F. Scott, Hon. A. C. Mitchell, Hon. Clyde Miller, J. B. Bury, Regius professor of history in Cambridge University, England; Prof. Lloyd Morgan, principal of University College, Bristol, England; Rev. Albert J. Nathan, Tangiers, Morocco; Pres. G. A. Gates, Pomona College, California; Dean Main, Grinnell College, Iowa; B. B. Herbert, editor *National Printer-Journalist*, Chicago; Prof. Richard T. Ely, of Wisconsin University; Prof. Ellen H. Richards, of the Massachusetts Institute of Technology; C. M. Harger; J. H. Engle; Rev. R. A. Hume, of India; President Nichols, of the State Agricultural College; Pres. J. N. Wilkinson, of the State Normal; Mrs. Esther G. Frame; Dr. Arthur Holmes, Ann Arbor, Mich.; Alfred C. Millican, of Seattle, Wash.; Rev. C. N. Severance; Dr. James H. Canfield, of New York; Dr. E. A. Steiner; Chancellor Frank Strong; Hon. Scott Hopkins; and Professors Snow, Abbott, Boodin, and Carruth.

**Young Men's Christian Association.** The Young Men's Christian Association is an organization composed of 250 Christian men of the University, banded together for the purpose of preserving and advancing the spiritual interests of the institution. This object is attained through the work of the various departments, and through the helpful Christian fellowship of the young men in their intercourse with one another. Religious services, to which all the men of the University are cordially invited, are held every Sunday afternoon at the Christian church, corner of Kentucky and Quincy

streets, and midweek prayer-meetings are held every Thursday evening for a half-hour after supper. The Sunday afternoon services are rendered especially interesting by the presence of prominent speakers from various parts of the state.

The Bible study department organizes classes in systematic Bible study, under competent instructors, and offers courses of study in the life of Christ, the apostolic church, the Old Testament, and mission study. During the present year twelve such classes have been maintained, with 125 men enrolled. Doctor Payne's Saturday evening class has an attendance of fifty.

The organization leases a large house, which is the center of association life, and affords excellent opportunities for the work of the social committee. Besides the large public receptions at the opening of each term, this committee arranges for a series of socials, reaching different classes of men in their turn; while the parlors of the house, furnished with a piano and games, are open to the men of the University at all times. The association employs a general secretary, who devotes all his time to association work.

Members of the association meet students at the trains and assist them in finding rooms and boarding-places. The employment bureau will render all assistance possible to students desiring to earn a part of their expenses. There will be sent to any address, on application, a handbook giving valuable information to prospective students. Address the general secretary of the association.

**Young Women's Christian Association.** The Young Women's Christian Association is an organization composed of 175 young women of the University, united for the attainment of the most perfect development of Christian character among the young women of the institution. The work of the association is divided into eight departments, each in charge of a permanently organized committee. The midweek religious services of the association are arranged by the devotional committee, which provides able speakers upon subjects of practical interest and value to young women. The missionary committee conducts five classes in the study of missions, and the association, through this committee, assists materially in the support of one its former members as a Y. W. C. A. secretary in India. There are also sixteen classes in systematic Bible study, pursuing courses in the life of Christ, in Old Testament history, and in Acts and the Epistles.

The association seeks to develop the social as well as the spiritual life of its members, and for this reason the social committee holds a prominent place in the association work. Receptions to new students are held at the opening of the fall term, and are followed by

numerous social gatherings throughout the year, at the Y. W. C. A. house. The association employs a general secretary, who gives all of her time to work among the young women.

The members of the association gladly assist young women just entering the University in securing boarding- and rooming-places, and, when desired, employment. The students' handbook, which is published in conjunction with the Young Men's Christian Association, will be sent to any address upon application to Miss Anna Smith, 736 Kentucky street, Lawrence, Kan.

**Relation to City Churches.** The churches of Lawrence unite in extending to the University students a cordial invitation to enter with them into Christian fellowship, and endeavor to make them feel that, irrespective of church membership, they are welcome to all the privileges which the church affords. To this end the various churches hold receptions for the students at the beginning of each year, the pastors preach special sermons to the students from time to time, and the young people's societies arrange for social gatherings to which the students are especially invited. There are also organized, in the principal Sunday-schools of the city, special classes for University students, a number of these classes being in charge of University professors.

By these means the students are brought closely in touch with the religious life of Lawrence, which may well be called a city of churches. A religious census of the student body during the past few years shows that eighty-seven per cent. of the students are church adherents, fifty-six per cent. are church members, and a large number are actively engaged in the work of the various churches and organizations connected therewith throughout the city.

**The Bible Chair.** April 1, 1901, the Woman's Board of Missions of the Christian Church established a chair of Biblical instruction at Lawrence for the benefit of University students. A site has been purchased on Mount Oread, adjoining the University campus, where, in the residence of the instructor, the work is now being carried on. The plans for a hall especially adapted to the growing needs of the Bible chair have been drawn. The work of building will begin about September 1, 1905. The hall will cost $25,000.

There is no organic relation between the Bible chair and University. Its support rests entirely upon private gifts. No fees are charged. The privileges are offered to all students, without regard to their religious affiliations, and the courses are arranged to meet their convenience.

The instruction is non-sectarian. The purpose of the work is to

bring students in touch with the book which more than any other has made civilization, and which bears the message best adapted to meet man's moral and spiritual needs.

The courses include studies in both the Old and New Testaments, and the history of missions. The Hebrew language is offered to such as are interested or who are preparing for the ministry. Wallace C. Payne, A. B., A. M., (Bethany College), B. D., (Yale University), and graduate student of the University of Chicago, occupies the chair. Mrs. W. C. Payne is associated with him.

During the four years now closing, about 700 students have taken advantage of the opportunity thus given to acquaint themselves more fully with the Bible.

Beginning October 1, 1905, studies will be offered by Professor Payne in the "Life of Christ," "Paul's Life and Letters," "Peter's Life and Writings," and "Old Testament History." Short courses of three to eight lectures will be given on "Israel and the Great Nations of the Past," "The Wisdom Literature of the Old Testament," "The Psalms," "The Old Testament Prophets," "The Man, Christ Jesus," "The Teaching of Jesus," "The First Century Church," "The Writings of John," "The Growth of the English Bible."

Mrs. W. C. Payne will lecture upon "The Women of the Bible," "The History of Missions," "The Lives of Great Missionaries," and "The Miracles and Parables of Jesus."

In addition to the studies given at the lecture-room, 1300 Oread avenue, during the school year 1905–'06, special attention will be given group classes for Bible study in private, fraternity and sorority houses.

Any one desirous of further information may address Prof. W. C. Payne, 1300 Oread avenue, Lawrence, Kan.

## Social and Literary.

**Association of the Ladies of the Faculty.** The women connected with the University as instructors and the wives of instructors form an association whose purpose is to promote the moral and social welfare of the students, and to further an acquaintance between themselves and the students. To this end, besides general receptions, gatherings for the discussion of questions of common interest are held from time to time. A committee of the association meets the young women at the University during the opening week of the year, and assists them in finding suitable boarding- and rooming-places. Students are always cordially welcome in the homes of the Faculty.

**The University Association.** This is an organization of stu-

dents and alumni for the purpose of promoting University spirit and advancing the interests of the University in any possible manner.

**Literary Societies.** There are four of these: The Snow, the Senate, the X Y Z, and the Adelphic. The objects which they are intended to promote are to cultivate literary taste and the spirit of sound criticism, to develop the necessary qualities of public speaking, and to learn the methods and rules of legislative bodies. The students of the School of Law maintain two debating societies, the Kent Club and the Cooley Club.

**German Club.** All students in the German department are eligible to membership in the German Club, which meets once a week in the German recitation-room. The object of the club is to furnish the student special opportunity to familiarize himself with the spoken language and to promote an interest in all that is German. Musical and literary programs are rendered each week by students, and the meetings are conducted exclusively in German. There are besides this club several smaller conversational circles, presided over by the instructors in the department. A special feature in connection with the club is the German play, which is given each year by the students of the department.

**The Quill Club.** An organization of students and instructors especially interested in English composition, which meets to hear and discuss original productions presented by members and others.

**French Club.** The instructors and students in the French department compose the *Cercle français*, which meets once a week to present a brief literary program, reviews of articles in the leading French magazines, and reports on French topics. French only is used, as one of the chief objects of the club is to provide better opportunities than can be offered in the classroom for the practice of the spoken language. Another opportunity for such practice is found in the French play, which is given towards the close of the year by the students of the department.

## Scientific.

**Biological Clubs.** The instructors and students in each of the biological departments meet weekly, in separate clubs, for the discussion of matters relating to their respective branches of biological science.

**Chemical Club.** This is composed of the instructors and advanced students in the departments of chemistry and pharmacy. It holds weekly meetings, at which the following are presented: Re-

ports on research work by instructors and students; reports on scientific meetings and associations; reviews of new books and important articles in chemical journals; notices of important inventions and new chemical processes.

## Debating and Dramatic.

**Debating Council.** The council is made up of representatives chosen from the literary societies of the University, and under its supervision are held all preliminary and interstate debates. At present, annual debates are held with the Universities of Iowa and Missouri.

**Oratorical Association.** This is a permanent student organization, having charge of all oratorical contests.

**Dramatic Club.** The students of the University maintain a Dramatic Club for the study and presentation of modern plays. Membership in the club is open to all students, and is secured by dramatic trials held at the beginning of the first term.

## Musical.

**Orchestra.** Young men and women of the University form an Orchestra each year to furnish music for the chapel, commencement, and special convocations. The Orchestra has been reorganized and enlarged, and is under the direction of the Dean of the School of Fine Arts. Two annual concerts are given.

**Young Men's Glee Club.** The Men's Glee Club has been reorganized and placed upon a stable foundation. It is under the direction of the head of the department of voice training of the School of Fine Arts. The general control of the club, as to financial obligations and tours, is in the hands of a committee of the University Council. The semiannual concerts, given in December and May, are important University events. A tour of the state is made during the Christmas vacation.

**Young Women's Glee Club.** The Young Women's Glee Club has also been reorganized. It will give an annual concert, and will, in conjunction with the young men's club, afford opportunity for chorus work at University events. The club is under the same direction as that of the Young Men's Glee Club. It is also under the general control of the committee of the University Council. The two clubs unite with the Orchestra in giving an opera.

**Band.** A band is formed each year, under a competent leader,

among the young men of the University. It furnishes music at the various athletic contests held at the University and for other student gatherings.

**The Lawrence Choral Union.** The Choral Union is composed of musical people of Lawrence and students of the University, mainly from the glee clubs named above. The director is the Dean of the School of Fine Arts. The Choral Union undertakes chorus work of importance, especially the chorus work for the annual May festival at Lawrence.

**The Mandolin Club.** This club is for the purpose of combining the musical elements of the University interested in the mandolin, guitar, and banjo. The leader is appointed by the Dean of the School of Fine Arts. This club gives two annual concerts.

## University Concerts, Addresses, and Art Exhibition.

### Concerts.

SEPTEMBER, 1904. Recital at the down-town studios, by the Fine Arts Faculty.

OCTOBER, 1904. Concert, by the Fine Arts Faculty.

OCTOBER, 1904. Piano recital, by Mary Hallock Greenwalt.

DECEMBER, 1904. Annual Christmas concert, by students of the Department of Music of the School of Fine Arts.

DECEMBER, 1904. Piano recital, by Edward Baxter Perry.

DECEMBER, 1904. First chamber music concert, by the Fine Arts Faculty, assisted by Mr. Frederick Wallis, baritone, and Miss Boright, violoncello.

DECEMBER, 1904. Annual winter concert, by the University Glee Club.

DECEMBER, 1904. Annual winter concert, by the University Mandolin Club.

DECEMBER, 1904. Annual winter concert, by the University Orchestra.

DECEMBER, 1904. Recital, by the Fine Arts Faculty, complimentary to the State Teachers' Association.

JANUARY, 1905. Second chamber music concert, by the Fine Arts Faculty, assisted by Mr. Hermann Springer, baritone, and Miss Boright, violoncello.

FEBRUARY, 1905. Piano recital, by Mr. Henry G. Hanchett.

MARCH, 1905. Third chamber music concert, by the Fine Arts Faculty.

MARCH, 1905. Fourth chamber music concert, by the Fine Arts Faculty.

APRIL, 1905. Fifth chamber music concert, by Miss Mary Wood Chase, pianist, of Chicago, and Professor Wylie, violinist.

MAY, 1905. Annual spring concert, by the University Glee Club.

MAY, 1905. Annual spring concert, by the University Mandolin Club.

MAY, 1905. Annual spring concert, by the University Orchestra.

MAY, 1905. Second annual musical festival—three concerts—first, May 26, by the Fine Arts Faculty and University Orchestra; second, May 27, by the Chicago Symphony Orchestra; third, May 27 (evening), by the Festival Chorus and Chicago Symphony Orchestra.

JUNE, 1905. Annual commencement concert, by students of the School of Fine Arts.

JUNE, 1905. Graduating recitals in piano, voice, organ, and elocution.

**Addresses.**

The following University addresses were delivered at the University during the academic year 1904–'05; all University students were admitted to these addresses without charge:

JUNE 5, 1904. Baccalaureate sermon, Prof. Leverett W. Spring, of Williams College.

JUNE 6, 1904. The Sigma Xi address, Dr. John Harper Long, (class of '77).

JUNE 7, 1904. Alumni address, George O. Virtue, (class of '92).

JUNE 8, 1904. Commencement address, Prof. Hugo Münsterberg, of Harvard University. Subject: "The Conception of Duty."

SEPTEMBER 9, 1904. Address at the opening of the University year, by Hon. T. A. Noftzger.

SEPTEMBER 26, 1904. Prof. J. B. Bury, Regius professor of history, Cambridge University, England. Subject: "The Roman Abandonment of Briton."

OCTOBER 2, 1904. Dr. C. Lloyd Morgan, principal of University College, Bristol, England. Subject: "The Instinctive and Ideational Factors in Perception."

OCTOBER, 1904. Dr. Richard T. Ely, University of Wisconsin.

Subjects: "Race Improvement," "Industrial Democracy in American History," "Woman and the Equality of Opportunity."

October 27, 1904. Prof. Ellen H. Richards, of the Massachusetts Institute of Technology. Subject: "Domestic Science as a Factor in the Education of Women."

November 15, 1904. T. Shillington, of the *Rhodesian Herald*, Salisbury, Rhodesia. Subject: "Newspaper Methods in South Africa."

December 19, 1904. B. B. Herbert, of the *National Printer-Journalist*, Chicago, Subject: "The Modern Newspaper."

December, 1904. Prof. James A. Craig, of the University of Michigan. Subject: "The Decipherment of the Cuneiform Inscriptions."

December, 1904. E. H. Scott, of the publishing house of Scott, Foresman & Co. Subject: "Book-making."

January 10, 1905. Prof. E. L. Stevenson, of Rutgers College. Subject: "Maps and Map-making." Illustrated.

January 11, 1905. Prof. G. M. Pearson, Swarthmore College. Subject: "The Relation of Literature to Public Speaking."

January 13, 1905. Charles Moreau Harger, editor of the Abilene *Reflector*, Subject: "Journalism and Literature."

February 27, 1905. Prof. R. B. Richardson, of New York. Subject: "Sicily." Illustrated.

March 21, 1905. Prof. Arthur Fairbanks, of the University of Iowa. Subject: "The Eleusinian Mysteries."

March 24, 1905. Dr. E. A. Steiner, of Iowa College. Subject: "Russian Problems of To-day."

### Art Exhibition.

An annual exhibition of works of art will be held at the University each year, in December, together with a course of lectures upon subjects related to the fine arts.

During the present year the exhibition consisted of sixty-four paintings by American artists. Thirty rubbings from English monumental brass tablets from the collection of Prof. W. C. Abbott, and 1000 book plates from the collection of Dr. A. W. Clark. Twenty-four of the paintings were from the collection of Mr. Samuel T. Shaw, of New York, and contained those that have taken the "Shaw

fund" prize of $1500 at the Society of American Artists. The following artists were represented by some of their best works:

| | |
|---|---|
| George R. Barse, jr. | Wm. Sargeant Kendall. |
| E. A. Burbank. | C. Morgan McIlhenny. |
| Frank W. Benson. | Geo. W. Maynard. |
| Benjamin C. Brown. | Willard L. Metcalf. |
| Emil Carlsen. | Leonard Ochtman. |
| Alfred H. Clark. | E. W. Redfield. |
| William M. Chase. | Theodore Robinson. |
| Frederick S. Church. | Julian Story. |
| Herbert Denman. | Douglas Volk. |
| Edward Gay. | Henry O. Walker. |
| Childe Hassam. | Irving R. Wiles. |
| H. Bolton Jones. | Alexander Harrison. |
| Charles S. Pearce. | Edmond H. Wuerpel. |

The exhibition will be thrown open annually, free, to the State Teachers' Association.

### Athletic.

**Athletic Association.** This association is organized to encourage and promote the physical education and hygienic training of matriculates and graduates of the University of Kansas, and to foster and supervise athletic games, to wit, baseball, boating, football, tennis, track athletics, basket-ball, and other innocent sports, in connection with the University. Membership in the association is open to all students, graduates, officials, and members of the faculty.

**The Country Club** is one of the oldest University organizations. Its object is to take the students on tramps into the country surrounding Lawrence, studying the historical events associated with the vicinity and natural objects in their own realm.

**The Golf Club** has its links on the University grounds. It is a self-supporting, independent organization, and membership is open to students of the University.

**General Athletics.** The general athletics of the University include football, baseball, basket-ball, tennis, and other forms of exercise.

**Intercollegiate Games** are held as often as deemed best, for the encouragement of *esprit de corps* among the students and a friendly rivalry between sister universities.

**Control.** All forms of exercise, athletics and games are under the control of the director of the gymnasium and his assistants. Competitive games and athletics are encouraged to the extent of in-

spiring the student to develop his physical condition, but not to the extent of interfering with his studies.

**The Athletic Board.** All intercollegiate athletic contests are under the control of the University Athletic Board, composed of four students elected by the students, four Faculty members elected by the University Council, the Chancellor of the University, the president of the Athletic Association, and the professor of physical education. The last three are *ex officio* members.

**Rules.** The University Council has adopted rules governing the standing of all those who represent the University in athletic contests. Good scholarship and gentlemanly conduct are required of all such contestants. The rules of the Chicago conference, supplemented by the Topeka conference, govern in every case.

### University Publications.

**The University of Kansas Science Bulletin,** formerly the *Kansas University Quarterly*, is maintained by the University as the medium for the publication of the results of original research by members of the University. Papers are published in it only on recommendation of the committee on publication, which committee is composed of five members of the scientific faculty. Formerly the *Quarterly* was issued at regular intervals, as indicated by the title, but numbers of the present series appear without regard to specific dates. A volume consists of about 400 pages, with the necessary illustrations. The price of subscription is three dollars a volume. Individual numbers vary in price with the cost of publication. The current volume of the present year is volume III; continuous series, volume XIII. Exchanges with similar publications of other colleges or universities and learned societies are solicited. H. B. Newson is managing editor. Communications should be addressed to him.

**The University News Bulletin** is issued weekly from the Registrar's office, for the purpose of furnishing the newspapers, high-school students and others of the state items of interest regarding University affairs. It will be sent regularly, without charge, to any one who may express a desire to receive it.

**The Kansan** is a newspaper published twice a week by student representatives from the various schools of the University.

**The Jayhawker** is the annual published each year by the Senior classes of the schools of the University.

**The Kansas University Lawyer** is published monthly by the

students of the School of Law, and is devoted to the interests of that school.

**The Graduate Magazine** is published monthly during the academic year by the Collegiate Alumni Association.

**The University Geological Survey Reports** are issued from time to time as material for them is gathered.

### Lectures Offered to Kansas Communities.

In order that as many people of the state as possible may receive some immediate benefit from the University as an institution established for the dissemination of learning, a large number of lectures are offered to Kansas communities by the Faculty of the University. For these lectures no charges are made beyond the actual expenses of the lecturers, when the lectures are made free to the public; but when admission is charged the lecturer will require a fee of five dollars, besides expenses. For experimental lectures, or those illustrated with lantern slides, an additional fee of five dollars may be charged. These lectures are suitable for delivery under the auspices of high schools, educational, literary or religious societies.

### Recommendation of Teachers.

The University endeavors to assist those of its graduates who desire to teach in securing positions, and at the same time to be of service to high schools, academies and colleges which may be in need of competent instructors. To this end a committee of the Faculty preserves a complete list and record of graduates who are engaged in teaching or have fitted themselves especially for such work. The University authorities are thus prepared at any time to recommend persons who are well qualified for any position that may be made vacant. In so doing, great care is exercised, the special qualifications of various teachers for the particular position in hand being in every case fully considered.

# PART III.

# Departments of Instruction.

# I. The Graduate School.

## Faculty.

Frank Strong, Ph. D., President.

Frank W. Blackmar, Ph. D., Dean, and Professor of Sociology and Economics.

Francis H. Snow, Ph. D., Professor of Organic Evolution and Systematic Entomology.

Ephraim Miller, Ph. D., Professor of Mathematics and Astronomy.

William H. Carruth, Ph. D., Professor of Germanic Languages and Literatures.

Frank O. Marvin, A. M., Professor of Civil Engineering.

Edgar H. S. Bailey, Ph. D., Professor of Chemistry and Metallurgy.

Alexander M. Wilcox, Ph. D., Professor of Greek Language and Literature.

Lucius E. Sayre, Ph. M., Professor of Pharmacy.

Lucien I. Blake, Ph. D., Professor of Physics and Electrical Engineering.

Lewis L. Dyche, M. S., Professor of Systematic Zoology.

Charles G. Dunlap, Litt. D., Professor of English Literature.

Olin Templin, A. M., Professor of Philosophy.

Edwin M. Hopkins, Ph. D., Professor of Rhetoric and English Language.

Frank H. Hodder, Ph. M., Professor of American History and Administration.

Erasmus Haworth, Ph. D., Professor of Geology and Mineralogy.

Arthur T. Walker, Ph. D., Professor of Latin Language and Literature.

William C. Stevens, M. S., Professor of Botany.

Arvin S. Olin, A. M., Professor of Education.

Eugenie Galloo, A. M., Professor of Romance Languages and Literatures.

Wilbur C. Abbott, B. Litt., Professor of European History.

Charles S. Skilton, A. B., Professor of Musical Theory, History of the Fine Arts, and Organ.

John E. Boodin, Ph. D., Professor of Philosophy.

Henry B. Newson, Ph. D., Associate Professor of Mathematics.

James Naismith, M. D., Associate Professor of Physical Education.

Marshall A. Barber, A. M., Associate Professor of Cryptogamic Botany and Bacteriology.

Samuel J. Hunter, A. M., Associate Professor of Entomology.

Edward Bartow, Ph. D., Associate Professor of Chemistry.

Ida H. Hyde, Ph. D., Associate Professor of Physiology.

Miles W. Sterling, A. M., Associate Professor of Greek.

Raphael D. O'Leary, A. B., Associate Professor of English Language.

Clarence E. McClung, Ph. D., Associate Professor of Zoology.

George H. Hoxie, M. D., Associate Professor Anatomy.

William H. Johnson, A. M., Associate Professor and High School Visitor.

William W. Lawrence, Ph. D., Associate Professor of English Literature.

Howard D. Hess, M. E., Associate Professor of Mechanical Engineering.

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**Administrative Committee.**

Frank W. Blackmar.....*Dean.*

Frank H. Hodder. William H. Carruth.

Frank O. Marvin. Edgar H. S. Bailey.

# The Graduate School.

## Purposes of the School.

THE Graduate School provides all the instruction in advanced subjects offered in the University. It is under the direction of the faculty and administrative committee of the Graduate School, the Dean of the Graduate School being chairman of the administrative committee.

It was organized in 1896, mainly out of the College of Liberal Arts and Sciences and the School of Engineering, and the most of the work offered by the Graduate School is given in connection with the several departments of these schools.

It is the business of the faculty of the Graduate School to formulate courses in graduate work; to establish and maintain the requirements for all higher degrees offered by this University; to make recommendations for those degrees to the Board of Regents; and to fix such regulations as they may deem expedient for the government of the school.

### Requirements for Admission.

Admission to the Graduate School ordinarily is granted to graduates of this University holding the bachelor's degree, and to graduates of other colleges and universities of good standing, on presentation of proper evidence of scholarship and testimonials of good character.

### Rules for Graduate Work.

Graduate students, whether candidates for a degree or not, must be in regular attendance on such course or courses as may have been selected and approved, and will be required to pass all examinations, or to submit to such other regulations and requirements as may be imposed by the heads of the departments concerned. Graduate students who pursue their work in part elsewhere must conform to the requirements imposed in each case by the administrative committee.

### Registration.

When it is ascertained in what department the student desires to do his major work, the Dean will refer him to the head of that department, who will select the courses, after cousultation with the stu-

dent. The student will then submit the courses to the Dean, and if approved the applicant will be given a card permitting him to register in the office of the Registrar. Work to be counted as graduate work is specified in the catalogue, and must be designated as graduate on the enrolment card filed in the Registrar's office.

## Degrees Granted.

The University offers eight advanced degrees, viz.:

| | |
|---|---|
| Master of Arts. | Mechanical Engineer. |
| Master of Science. | Mining Engineer. |
| Electrical Engineer. | Chemical Engineer. |
| Civil Engineer. | Doctor of Philosophy. |

### Master of Arts and Master of Science.

The master's degree will be granted only after at least one full year's graduate work. One year of residence at the University is required for the master's degree. Time spent in undergraduate work may be counted in satisfying this rule. The candidate must have completed with high credit thirty hours of work chosen from the courses open to graduates; other courses may be offered only by the special consent of the departments concerned and of the administrative committee; but courses for which a professional certificate or diploma is given will not be counted toward this degree. Not more than fifteen hours' credit can be given in one term.

The degree of master of arts will be granted to bachelors of arts and the degree of master of science to graduates in engineering. Students who have had special preparation in scientific studies and whose graduate work is in scientific departments may, upon recommendation of the administrative committee, receive the degree of master of science.

When the candidate is first permitted to enroll as a graduate student, he shall select the department in which his major work is to be done. The head of that department will, in consultation with the candidate, select the courses to be taken for the ensuing term. These may be confined to the department of his major study, or may be selected from that and not more than two other departments. The decision of the head of the department shall be subject to the veto of the Dean of the Graduate School; appeal may be made from the decision of the Dean to the Graduate Faculty. If the student subsequently changes his selection of a major department, the graduate work already done shall not be counted toward the master's degree unless approved by the head of his new major department.

Not later than the 15th of May preceding the commencement at

which the degree is to be conferred, he must present to the head of the department in which his chief study has been a thesis which must embody some scholarly research on some topic connected with that study. The thesis shall be written, either in a clear, legible hand or typewritten, on bond paper of twenty pounds' weight to the ream; the paper to be cut to the size of eight inches by ten inches. One and one-half inches margin must be left on the left side of the paper, for convenience in binding.

Not more than five hours of graduate work may be done *in absentia* in candidacy for the master's degree, and this only in case of student's completing the work for the degree. The term *in absentia* applies to work not done in colleges and universities.

### Engineering Degrees.

Graduates in engineering of this University, and masters of science who have received their degrees through the Graduate Faculty, are eligible to the professional degrees of civil engineer, electrical engineer, mechanical engineer, mining engineer, or chemical engineer, whichever is appropriate to the undergraduate course taken. Candidates for these degrees must have spent at least three years' actual time in professional practice, in positions of responsibility, in the design, construction or operation of engineering works, and must furnish detailed and satisfactory evidence as to the nature and extent of this practice.

They must submit an engineering thesis, accompanied by detailed explanations, drawings, specifications, estimates, etc., and embodying the results of their own work or observation. If approved, the thesis and all accompanying material shall be the property of the University.

All theses for any professional degree must be delivered to the Dean of the School of Engineering on or before the 15th day of May.

### Doctor of Philosophy.

The degree of doctor of philosphy will be granted on the ground of advanced scholarship, and the performance of independent work in some special line, under the following conditions:

1. The candidate must be a baccalaureate graduate of this University or of a college or university of good standing; or he must give satisfactory evidence to the faculty of the Graduate School that he possesses an adequate preparation for graduate work.

2. He must make application to the Dean of the Graduate School before the 1st day of October preceding the commencement at which he intends to present himself for the degree, and must then give

satisfactory evidence of his ability to read such German and French as may be necessary for the proper prosecution of his studies.

3. He must have spent at least three full college years in resident graduate work at this or some other approved university; the last year must be spent as a resident student of this University. The time spent in attaining the degree of A. M. may be counted toward satisfying this time condition.

4. He must present a thesis showing the result of original research of a high character, and must pass acceptable examinations, both written and oral, in one chief or major study and two allied, subsidiary or minor studies, not more than two of which may be in the same department. The oral examination shall be before the faculty of the Graduate School, where he may be required to defend his thesis. The thesis, embodying the results of original research in some subject connected with his major study, must be presented to the head of the department in which the work was done not later than the 1st of May preceding the commencement at which the degree is to be conferred, and if approved by him shall be placed on file for inspection in the office of the Dean of the Graduate School for at least two weeks. If finally approved, not less than 100 printed copies must be delivered to the Librarian of the University before receiving the degree, or proper security be given for the printing of that number; provided, that if the thesis has already been printed, ten copies only shall be deposited with the librarian.

## Fees and Expenses.

According to a recent act of the state legislature, an incidental fee of ten dollars is charged students of this school. Students who matriculate for the first time pay five dollars additional. A diploma fee of five dollars is required. The other expenses of students differ according to circumstances and the tastes of the student. A full statement in regard to general expenses will be found under the College of Librarian Arts and Sciences, on another page of this catalogue.

## Graduate School Organizations.

**The Graduate Club.**—This is an organization composed of the graduate students of the University, designed especially to bring this class of students, each of whom is largely working independently, into closer touch socially and intellectually.

**Other Organizations.**—Students of the Graduate School are also eligible to membership in other organizations of the University, such as the literary societies, the modern language and science clubs,

etc., a full account of which will be found in another part of this catalogue.

## Seminars and Conferences.

The Seminars of the Graduate School are also open under certain conditions to undergraduates pursuing advanced work.

**American History.** The seminar in American history meets once a week for research work in some phase of American history.

**European History.** The seminar in European history is held once in two weeks. Some period of European history is selected for consideration.

**German.** The meetings average once a week during the year and advanced work is assigned and reported on.

**Zoology.** The meetings average once in two weeks, and problems in heredity are under consideration during the present year.

**Bacteriology.** The students in bacteriology have special meetings once a week.

**Sociology and Economics Conference.** A general conference, open to graduate students, for the discussion of topics in economics, meets once each week.

## Seminar Rooms.

**The Spooner Library** is well furnished with facilities for seminar and departmental work. Separate rooms for seminar work are provided in Latin, German, philosophy, English literature and language, mathematics, European and American history. The entire upper floor of the library, outside of the stacks, is given up to the departmental libraries, economics, sociology, American and European history. The seminar work in science is done in the buildings devoted to the work of the separate departments.

## Fellowships.

For the encouragement of advanced study and research, eleven teaching fellowships have been established for graduates of special merit. Each fellowship entitles the holder to $215. Holders of such fellowships are obliged to teach not more than seven hours a week in the respective departments in which they are chosen. The remainder of the time shall be devoted to investigation and research leading to an advanced degree.

These fellowships are awarded to graduates of the University of Kansas, and of other colleges and universities of good standing, who have distinguished themselves for special scholarship and marked

ability. Application for fellowships must be filed, on blanks provided for the same, with the Chancellor of the University, on or before the 15th of May of the collegiate year preceding that during which the fellowship is held. Such application may be accompanied by recommendations from instructors, and original work of the applicant, either published or in manuscript.

The relative merits of applicants shall be considered by a committee composed of the members of the administrative committee of the Graduate School and the heads of the departments in which the fellowships are granted. The committee, after a full consideration of the merits of all applicants, shall nominate the candidates and recommend the same to the Regents for election.

The Board of Regents will determine each year the departments in which fellowships shall be granted. All fellowships will be filled each year. Fellows may be reelected, in special cases, for one additional year only.

For the year 1905–'06 fellowships will be awarded in the following subjects: German, mathematics, education, sociology, Romance languages, English language, chemistry, American history, European history, zoölogy, and philosophy.

## Departments.

The following groups of departments offer graduate work in the University. In some of them the facilities are adequate for thorough training for the doctor's degree. In all of them the facilities are excellent for work leading to the master's degree. See headings (enumerated below) on other pages of this catalogue. (See index.)

1. English Literature and Language.
2. Modern European Languages and Literatures.
3. Classical Languages and Literatures.
4. History and Government.
5. Sociology and Economics.
6. Philosophy and Psychology.
7. Physical Sciences: Physics, chemistry, geology, anatomy, physiology.
8. Biological Sciences: Botany, zoology, entomology, organic evolution.
9. Mathematics and Astronomy.
10. Engineering.
11. Education.
12. Physical Education.

**Courses in Graduate Instruction** will be found in detail under courses of instruction for the College of Liberal Arts and Sciences and the School of Engineering.

# II. The College of Liberal Arts and Sciences.

## Faculty.

Frank Strong, Ph. D., President.

Olin Templin, A. M., Dean. Professor of Philosophy.

George O. Foster, A. B., Secretary.

Francis H. Snow, Ph. D., Professor of Organic Evolution and Systematic Entomology.

Ephraim Miller, Ph. D., Professor of Mathematics and Astronomy.

William H. Carruth, Ph. D., Professor of Germanic Languages and Literatures.

Frank O. Marvin, A. M., Professor of Civil Engineering.

Edgar H. S. Bailey, Ph. D., Professor of Chemistry and Metallurgy.

Alexander M. Wilcox, Ph. D., Professor of Greek Language and Literature.

Lucius E. Sayre, Ph. M., Professor of Pharmacy.

Lucien I. Blake, Ph. D., Professor of Physics and Electrical Engineering.

Lewis L. Dyche, M. S., Professor of Systematic Zoölogy.

Frank W. Blackmar, Ph. D., Professor of Sociology and Economics.

Charles G. Dunlap, Litt. D., Professor of English Literature.

Edwin M. Hopkins, Ph. D., Professor of Rhetoric and English Language.

Frank H. Hodder, Ph. M., Professor of American History and Administration.

Erasmus Haworth, Ph. D., Professor of Geology and Mineralogy.

Arthur T. Walker, Ph. D., Professor of Latin Language and Literature.

William C. Stevens, M. S., Professor of Botany.

Arvin S. Olin, A. M., Professor of Education.

William A. Griffith, Professor of Drawing.

Eugénie Galloo, A. M., Professor of Romance Languages and Literatures.

Wilbur C. Abbott, B. Litt., Professor of European History.

Charles S. Skilton, A. B., Professor of Musical Theory, History of the Fine Arts, and Organ.

John E. Boodin, Professor of Philosophy.

Henry B. Newson, Ph. D., Associate Professor of Mathematics.

James Naismith, M. D., Associate Professor of Physical Education.

Marshall A. Barber, A. M., Associate Professor of Cryptogamic Botany and Bacteriology.

Samuel J. Hunter, A. M., Associate Professor of Entomology.

Edward Bartow, Ph. D., Associate Professor of Chemistry.

Ida H. Hyde, Ph. D., Associate Professor of Physiology.

Miles W. Sterling, A. M., Associate Professor of Greek.

Raphael D. O'Leary, A. B., Associate Professor of English.

Clarence E. McClung, Ph. D., Associate Professor of Zoölogy.

George H. Hoxie, M. D., Associate Professor of Anatomy.

William W. Lawrence, Ph. D., Associate Professor of English Literature.

Howard D. Hess, Associate Professor of Mechanical Engineering.

Hannah Oliver, A. M., Assistant Professor of Latin.

Martin E. Rice, M. S., Assistant Professor of Physics and Electrical Engineering.

Elmer F. Engel, A. M., Assistant Professor of German.

Archibald Hogg, A. B., Assistant Professor of Philosophy.

Hamilton P. Cady, Ph. D., Assistant Professor of Chemistry.

Ralph W. Cone, A. M., Assistant Professor of Sociology and Economics.

George L. Lincoln, A. M., Assistant Professor of French.

William C. Hoad, B. S., Assistant Professor of Civil Engineering.

Alberta L. Corbin, Ph. D., Assistant Professor of German.

Alma Le Duc, Ph. B., Assistant Professor of French and Spanish.

John N. Van der Vries, Ph. D., Assistant Professor of Mathematics.

Edgar G. Frazier, Ph. B., Assistant Professor of Public Speaking.

Frederic N. Raymond, A. M., Assistant Professor of English.

Margaret Lynn, A. M., Assistant Professor of English.

Frank E. Bryant, A. M., Assistant Professor of English.

Carl L. Becker, B. L., Assistant Professor of European History.

Ralph E. Bassett, A. M., Assistant Professor of Romance Languages.

David F. McFarland, M. S., Assistant Professor of Chemistry.

Arthur J. Boynton, A. M., Assistant Professor of Sociology and Economics.

Charles H. Ashton, A. M., Assistant Professor of Mathematics.

George F. Kay, Ph. D., Assistant Professor of Geology and Mineralogy.

Robert W. Curtis, Ph. D., Assistant Professor of Chemistry.

A. Fremont Hendrix, A. M., Instructor in Latin.

Mary C. Fish, Instructor in Physical Education.

Louis E. Sisson, A. B., Instructor in Rhetoric.

William J. Baumgartner, A. M., Instructor in Zoology and Histology.

Henry O. Kruse, A. B., Instructor in German.

Ulysses S. G. Plank, B. S., Assistant in Physical Education.

Lulu Gardner, Assistant Instructor in Rhetoric.

Henry B. Miller, A. B., Assistant Instructor of Chemistry.

Charles G. Rogers, Ph. D., Assistant Instructor in Physiology.

Warren F. Faragher, Laboratory Assistant in Chemistry.

Larry M. Peace, A. B., Preparator in Botanical Laboratory.

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## Courses Offered.

The College offers the courses in literature, science and the arts that provide the so-called liberal education, and leaves in the main the applied science and arts to other departments. It is administered so that the required work for entrance and during Freshman and Sophomore years shall result in the student's having had a minimum number of courses in the fundamental branches of knowledge on which he will base his broader and more specialized work of the Junior and Senior years.

## Degrees.

The courses of study in the College lead to the degree of bachelor of arts.

Students who elect subjects in the School of Law receive the degree of bachelor of arts in law. Those who elect subjects in the

School of Medicine receive the degree of bachelor or arts in medicine. Students taking work in the department of education receive a teacher's diploma. (Consult index.)

## Admission.

There are two methods of admission to the College of the University: First, by examination; second, by certificate.

### 1. By Examination.

**Times and Place.** Candidates for admission to first-year work in the College of the University, not presenting the required certificates, will be examined at the University, Lawrence, either on Thursday, Friday, and Saturday, June 1, 2, and 3, 1905, or on Wednesday, Thursday, and Friday, September 6, 7, and 8, 1905. The following is the schedule of examinations in June and September:

**Thursday, June 1, or Wednesday, September 6.**

| | | | |
|---|---|---|---|
| 9–10. | English. | 1–2. | Physical geography. |
| 10–11. | Algebra. | 2–3. | German. |
| 11–12. | French. | 3–4. | Economics. |

**Friday, June 2, or Thursday, September 7.**

9–10. Geometry.
10–11. Latin.
11–12. History.
2–3. Greek.
3–4. Physics.

**Saturday, June 3, or Friday, September 8.**

8–9. Botany.
9–10. Chemistry.
1–2. Zoölogy.
2–4. Free-hand drawing.

Candidates for admission may divide the examination between two years, or between June and September of the same year, under the following conditions: The applicant may present himself at the preliminary for examination in any or all of the prescribed subjects, and, if he is successful in five or more subjects, he need not be again examined in them.

Examinations for advanced standing on work done in preparatory schools, not required for admission, will be held at the same time as entrance examinations above.

### 2. By Certificate.

Nearly all students enter the College by certificate from high schools, academies, preparatory schools of other colleges and universities, or from military schools, accredited by the University.

The candidate for admission by certificate must present either a certificate of graduation from an accredited preparatory school, or a letter from the principal of such school recommending him for admission without graduation. The certificate should be signed by the principal or other executive officer of the school. Blank certificates will be sent by the Registrar of the University about May 1 of each year to the principal of each accredited school. The certificates of all expecting to enter the College of the University should be filled out, signed and returned by the principal or other officer to the Registrar before June 1.

Blank certificates will be sent on application to the Registrar.

### Entrance Unit.

Preparatory work is estimated in terms of the "entrance unit." A subject (like algebra, for example) running one year, *i. e.*, thirty-five weeks, five recitations per week, with at least forty minutes for each recitation, constitutes one "entrance unit." In computing entrance units, the laboratory period should be twice the length of a recitation period.

### Number of Units Required.

Fifteen units are necessary for unconditional admission to the College. A temporary deficiency, however, of not more than three units will be permitted, but the deficiency in any "Group" given below must not exceed one unit. A student thus conditioned must make good all of his deficiencies during his first year in the University. Deficiencies thus made good do not count as College work.

### Making up Deficiencies.

In making up deficiencies at the University, a "College unit," *i. e.*, five hours a week for a half-year (one term), is considered equivalent to an "entrance" (or high-school) "unit," as above defined.

### College Credit.

College credit for work done in preparatory schools will be given upon examination only. (See page 68 for times and place of examination.)

## Subjects for Admission.

The subjects from which entrance work may be offered, together with the number of units, are arranged in six groups, as follows; a total of fifteen units must be offered:

| | | |
|---|---|---|
| GROUP I, English. | English, four units. | Three units are required. |
| GROUP II, Mathematics. | Elementary algebra, one and one-half units.<br>Plane geometry, one unit.<br>Solid geometry, one-half unit.<br>Plane trigonometry, one-half unit.<br>Advanced algebra, one-half unit. | The elementary algebra and plane geometry are required. |
| GROUP III, Foreign Languages. | Latin, four units.<br>Greek, three units.<br>German, three units.<br>French, three units. | Of these, three units are required, which must be, first, in Latin, or, second, in German. |
| GROUP IV, Physical Sciences. | Physical geography, one unit.<br>Physics, one unit.<br>Chemistry, one unit. | One unit is required. |
| GROUP V, Biological Sciences. | Botany, one unit.<br>Zoölogy, one unit. | One unit is required. |
| GROUP VI, History. | Greek and Roman, one unit.<br>Mediæval and modern, one unit.<br>English, one unit.<br>American, one unit.<br>Economics, one unit. | One unit is required. |

As observed above, to secure unconditional admission to the Freshman class of the College the candidate must offer fifteen units from the foregoing list of accredited preparatory subjects. Of these fifteen units, eleven and one-half are prescribed by group; the remaining three and one-half units may be chosen without restriction.

In view of the difficulty some preparatory schools may have in expanding their courses of study so as to include all the required units, until further notice, candidates will be admitted unconditionally who offer fifteen units from the foregoing list, although some of the required units may not be included. Such postponement of the completion of preparatory requirements is not possible in those subjects in which elementary courses are not offered in the College.

These subjects are three units of English, two units of Latin, two and one-half units of mathematics, physical geography, and American history.

Students who take advantage of this privilege of postponing prescribed entrance requirements must make good such deferred requirements during their first year in the College. A course so taken during the Freshman year not only satisfies the entrance requirements, but also counts as regular College work.

It is hoped that within a reasonable time all Kansas high schools will be able so to arrange their courses of study as to meet all the entrance requirements of the University.

Candidates who have partially completed their preparation in accordance with the system of entrance requirements previously in operation will be given due credit for the work they have done.

## Entrance Subjects in Detail.

**English.** Four units. (Three required.)

The requirement in English is that agreed upon by a joint committee of colleges and secondary schools and now uniformly accepted by all colleges in the United States. Of this requirement, the following is a general definition:

"**I. Reading.** A certain number of books will be set for reading (see list subjoined). The candidate will be required to present evidence of a general knowledge of the subject-matter and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics to be chosen by the candidate from a considerable number—perhaps ten or fifteen—set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the book. In preparation for this part of the requirement, it is important that the candidate shall have been instructed in the fundamental principles of rhetoric.

"**II. Study and Practice.** This part of the examination presupposes the thorough study of each of the works named in this division. The examination will be upon the subject-matter, form, and structure. In addition, the candidate may be required to answer questions involving the essentials of English grammar and on the

leading facts in English literary history to which the prescribed texts belong.

"*Note.*— No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, idiom, or division into paragraphs."

The books recommended for use in each of the preceding divisions are as follows:

**I. For Reading.** For 1905: Shakspere's The Merchant of Venice and Julius Cæsar; The Sir Roger de Coverley Papers in the Spectator; Goldsmith's The Vicar of Wakefield; Coleridge's The Ancient Mariner; Scott's Ivanhoe; Carlyle's Essay on Burns; Tennyson's The Princess; Lowell's The Vision of Sir Launfal; George Eliot's Silas Marner. For 1906, 1907, and 1908: Shakspere's The Merchant of Venice and Macbeth; The Sir Roger de Coverley Papers in the Spectator; Irving's Life of Goldsmith; Coleridge's The Ancient Mariner; Scott's Ivanhoe and the Lady of the Lake; Tennyson's Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur; Lowell's The Vision of Sir Launfal; George Eliot's Silas Marner.

**II. For Study and Practice.** For 1905: Shakspere's Macbeth; Milton's Lycidas, Comus, L'Allegro, and Il Penseroso; Burke's Speech on Conciliation with America; Macaulay's Essays on Milton and on Addison. For 1906, 1907, and 1908: Shakspere's Julius Cæsar; Milton's Lycidas, Comus, L'Allegro, and Il Penseroso; Burke's Speech on Conciliation with America; Macaulay's Essay on Addison and Life of Johnson.

The work indicated in the preceding statements is intended to occupy three years of a high-school course, five recitations weekly; and it is intended that teachers shall be left free to secure the indicated results in whatever way may prove most suitable, and, in particular, to substitute for the books named others of equivalent literary value and of similar types, or to add others to the list. Hence, it is impracticable to prescribe or to define precisely what should be done in any one year or in any one term; but a few suggestions may be made, to be followed at discretion.

It is preferable to carry on the subjects side by side, in the proportion of two recitations a week devoted to composition, grammar, and rhetoric, to three devoted to literature; the study of composition to include the writing of one or two exercises every week, and the discussion of these exercises to be made the means of reviewing the principles of grammar as well as those of rhetoric; text-books to be used chiefly for reference, if at all.

**Grammar.** If students do not enter the high school with such a practical knowledge of grammar as will enable them, on occasion, to name and classify parts of speech, explain the structure of sentences, and state and apply principles, the subject should be further studied in connection with the work in composition, and, if necessary, there may be a brief formal review at some stage of the high-school course.

**Composition and Rhetoric.** The text-book in rhetoric is to be regarded merely as an aid in the study of composition and of literature. Exercises in composition should be oral as well as written, and should be continuous through the high-school course. Subjects should be derived partly from the literature read by the class and partly from the student's own observation and experience. The order of advance may be: First, stories; the finding and shaping of descriptive and narrative material in easy, spontaneous expression. Second, essays; study of theme, plan, and paragraph. Third, the general principles of style; the sentence and the word. Fourth, the general principles of form — narrative and descriptive, expository and argumentative.

**Literature.** Text-books in history, biography and criticism are merely incidental aids in the study of classics, and, like those in rhetoric, should rarely, if ever, be made subjects of formal recitation, except in reviewing. It is desirable that, of the books read in the high-school course in literature, those of modern authors shall be taken up first, and that the order of types shall be such as will coordinate the study with that of composition. American literature, if included, should precede English, and the prose of any period should precede its verse. Reading done at home should be preceded and followed by class discussions and reports. At the end of the course there should be a chronological review, with a good text-book, of all the work that has been done, with a brief survey of earlier periods.

The books named in the preceding standard lists may be tentatively arranged by years in the order following, and the study of composition coordinated as shown. The earlier reading will be more rapid, the later more critical.

**First Year.**

*Literature — in class.*—Silas Marner, in part, or general survey and class discussion; Vision of Sir Launfal; Essay on Addison; Essay on Milton.

*Partly out of class.*—Silas Marner, completed; Ivanhoe; The Princess; The Ancient Mariner; Essay on Burns. (Changes, additions or omissions at discretion.)

*Composition.*—Finding and shaping of material; stories, essays, paragraphs, letters, etc.

**Second Year.**

*Literature.*—Speech on Conciliation; Vicar of Wakefield, in part, noting peculiarities of eighteenth-century style; minor poems of Milton; Vicar of Wakefield, completed; Sir Roger de Coverley Papers. (Other books at discretion.)

*Composition.*—The principles of style; sentences, words, paraphrase, etc.

**Third Year.**

*Literature.*—Macbeth; general review; Merchant of Venice; Julius Cæsar. (Other books at discretion; *e. g.*, Bunyan, Bacon, selections from English Bible.)

*Composition.*—The forms of discourse; general principles of narration and description, exposition and argument.

**Fourth Year.**

Accredited high schools may offer a fourth year of English, if approved by the High-school Visitor; and the character of this unit or fourth year's work may be arranged with reference to the conditions of individual schools. An alternative is offered between the following three courses:

1. The time may be given chiefly to the study of English literature of the seventeenth century and earlier, beginning with a thorough historical survey of the field, and including the reading of Old English verse in translation, of selections from Chaucer and Spenser, and of seventeenth century classics, prose and verse, not included in the course of the first three years. With this study there should be regular essay writing, not less often than once a month.

2. The time may be given chiefly to the study of the principal forms of discourse, narrative and descriptive, expository and argumentative, with daily practice in adapting these to all purposes and occasions for which speaking or writing is demanded, with especial reference to purpose and occasion, and to the character of the person or public to be addressed. With this there should be a considerable amount of collateral study of literary selections illustrating the several types as they are taken up for practice.

3. The time may be given chiefly to the study of English language; beginning with elementary Old English grammar, prose composition, and readings from the simplest prose and verse. Then may follow the history of the English language and grammar after the Old English period, with attention to orthography, pronunciation, word composition and word derivation, inflections and syntax; and the course may be completed with the study of Middle English

grammar, pronunciation, and selections from Chaucer. With this study there should be regular themes or essays, from once a week to once a month.

The third of these options is recommended wherever it is practicable to give it, and excellent text-books for it are available: Smith's Old English Grammar for the Old English part; Emerson's History of the English Language, or Champney's for the historical part, and, for the study of Middle English, Sweet's First and Second Middle English Primers, or the school editions of Chaucer's Prologue and the Knightes Tale.

Entrance certificates must show in complete detail the nature of this fourth unit, if offered.

Detailed suggestion with reference to the teaching of all subjects named may be found in the University "Handbook on the Teaching of English," by Prof. E. M. Hopkins. Sent on receipt of five cents for postage.

**Mathematics.** Four units, of which two and one-half are required.

It is assumed that all candidates for admission to the University are proficient in the practical applications of arithmetic. The University recommends that the arithmetic in the upper grades be made more algebraic in character or that some elementary algebra be taught in the grades in the place of some of the more abstract topics in arithmetic. It also recommends that concrete geometry, under its own name or under the name of geometrical drawing, be taught in the grades.

The University puts itself in line with the best mathematical thought of the day by making its entrance requirements in mathematics approximate as nearly as possible to the common standards agreed upon by the best colleges and universities of the country. These common standards are the recommendations of the committee of the American Mathematical Society, in cooperation with committees appointed by the Society for the Promotion of Engineering Education and the National Educational Association, on definitions of college entrance requirements in mathematics.

In harmony with these recommendations, the student must offer a minimum of two and one-half units, and may offer a maximum of four units in mathematics, in five subjects, as follows:

**Elementary Algebra.** One and one-half units. The required one and one-half units of algebra shall consist of the four fundamental operations of algebra: factoring; determination of highest common factor and lowest common multiple by factoring; fractions; simple equations, both numerical and literal; simultaneous equations, both

numerical and literal, containing two and three unknown quantities; radicals, including the extraction of the square root of polynomials and of numbers; exponents, including fractional and negative; quadratic equations, in one and two unknown quantities, both numerical and literal; ratio and proportion; binomial theorem for positive integral exponents; formulas for the *n*th term and the sum of the terms of arithmetic and geometric progressions, with applications.

Throughout the course the pupil should be required to solve numerous problems which involve putting questions into equations. Some of these problems should be chosen from mensuration, from physics, and from commercial life. The use of graphical methods and illustrations, particularly in connection with the solution of equations, is also required. The same credit will be given for the work if done partly in the grades and partly in the high school or if done wholly in the high school.

**Plane Geometry.** One unit. The usual theorems and constructions of good text-books, including the general properties of plane rectilinear figures; the circle and the measurement of angles; similar polygons; areas; regular polygons and the measurement of the circle. The solution of numerous original exercises, including loci problems, and the application to the mensuration of lines and plane surfaces is strongly insisted on. The first five books of Wentworth's Geometry (or an equivalent) will be accepted. This unit is required.

**Solid Geometry.** One-half unit. The usual theorems and constructions of good text-books, including the relations of planes and lines in space; the properties and measurement of prisms, pyramids, cylinders, and cones; the sphere and the spherical triangle; numerous original exercises, including loci problems and applications to the mensuration of surfaces and solids.

**Plane Trigonometry.** One-half unit. Definitions and relations of the six trigonometric functions as ratios; circular measurement of angles; proofs of principal formulas, in particular for the sine, cosine and tangent of the sum and difference of two angles, of the double angle and the half angle, the product expressions for the sum or the difference of two sines or of two cosines, etc.; the transformation of trigonometric expressions by means of these formulas; solution of trigonometric equations of a simple character; theory and use of logarithms (without the introduction of work involving infinite series); solution of right and oblique triangles and practical applications. Problems should be solved by the use of tables of

natural functions and also by use of tables of logarithms and logarithmic functions.

**Advanced Algebra.** One-half unit. Permutations and combinations, limited to simple cases; complex numbers, with graphic representation of sums and differences; determinants, chiefly of the second, third and fourth orders, including the use of minors and the solution of linear equations; numerical equations of higher degree, and so much of the theory of equations, with graphic methods, as is necessary for their treatment, including Descartes's rule of signs and Hornor's method, but not Sturm's functions or multiple roots.

Most candidates prefer to offer three units of mathematics for entrance; these three units should consist of the two and one-half units of required algebra and plane geometry and one-half unit of solid geometry or plane trigonometry.

**Latin.** Three or four units.

*First Unit.* Beginner's Book. In the book adopted for high schools in this state the first 213 pages should be completed. In all written exercises the long vowels should be marked, and in all oral exercises pains should be taken to make the pronunciation conform to the quantities. Students should be taught from the beginning to read the Latin aloud with intelligent expreseion.

The important things in this year are: First, a perfect knowledge of the paradigms; second, some practice in reading easy connected passages in preparation for the second year's work.

*Second Unit.* The first four books of Cæsar's Gallic War, or selections from Cæsar equivalent in amount to those books; and the equivalent of one period a week in prose composition. Selections from other prose writers, such as Nepos, may be taken as a substitute for one book of Cæsar, or an equivalent amount may be read in any of the "second-year books," provided at least two books of Cæsar are included.

The important things in this year are: First, a systematic drill on the more common case and mode uses; second, an intelligent comprehension of the matter read. The student should be able to give a good account of any of Cæsar's campaigns.

*Third Unit.* Six orations of Cicero, and the equivalent of one period a week in prose composition. The oration should include the four against Catiline and the Manilian Law. Sallust's Catiline may be substituted for the Manilian Law and a sixth oration.

The important things in this year are: First, a systematic drill in all Ciceronian case and mode uses; second, an intelligent comprehension of the contents of the orations.

*Fourth Unit.* The first six books of Vergil's Æneid, and the equivalent of one period a week in prose composition. An equivalent amount of Ovid may be substituted for part of the Vergil.

The important things in this year are: First, an intelligent appreciation of Vergil's story and art; second, a training in reading the meter which will allow the student to read the Latin metrically with ease and expression; third, a study of the mythology. If the work of the first three years has been done well, syntactical drill should be confined almost wholly to the period devoted to prose composition.

*Note.*—When only three units are presented, it is preferred that they be the first, second, and third; but the first, second and fourth will be accepted. No combination of Cicero and Vergil will be accepted as a unit.

*Latin Prose Composition.* It will be noticed that prose composition is required throughout the last three years. One period a week may be devoted to it, or a smaller amount may be given each day. Such books as Bennett's and Jones's are recommended as giving the more systematic drill, but they should be supplemented by the occasional dictation of connected passages based on the text read. Such books as Daniell's and Moulton's will be accepted, but they need to be supplemented by a systematic study of the grammar.

**Greek.** One, two or three units.

*First Unit.* Elementary Greek. White's First Greek Book or Gleason and Atherton's First Greek Book, or an equivalent. Thorough mastery of declensions and conjugations, and the main ideas of syntax. Xenophon's Anabasis begun, and twenty to thirty pages read. Goodwin's, Babbitt's or Goodell's Greek Grammar.

*Second Unit.* Xenophon's Anabasis continued into or through the fourth book, or an equivalent amount of other Attic prose. Review of inflections. Systematic study of syntax in the grammar. Practice in writing Greek based on the text read. Constant training in sight-reading.

*Third Unit.* Homer's Iliad or Odyssey, five to six books, exclusive of the Catalogue of Ships. Constant practice in reading at sight. Special attention to Homeric forms, vocabulary, and scansion. Attic prose composition once a week. Seymour's School Iliad. Perrin and Seymour's School Odyssey.

**German.** One, two or three units.

*First Unit.* The elements of grammar (the first twenty-four lessons of Otis's Essentials of German Grammar, or part I of Joynes-Meissner), including: (1) Careful drill in pronunciation; (2) famil-

iarity with German script and text; (3) the memorizing of paradigms; (4) the writing, correction, memorizing and reciting after correction of all the English-German exercises in one of these grammars; (5) colloquial exercises daily to illustrate and fix the principles and the vocabulary introduced; (6) the memorizing of 100 lines of good German (popular songs or narrative prose). One-half year.

The reading and translation of about seventy-five pages of simple German (as in Huss, Hewett, Joynes-Meissner, Brandt Readers). This reading should involve the reading aloud of the German, the rendering into good idiomatic English, and question and answer in German upon what is read. Word-for-word translation should not be permitted, save when necessary to show the precise force of an idiom. One-half year.

The above work will require, if properly done, five forty-five-minute periods weekly for thirty-five weeks. A wise plan is to begin with the grammar and carry this continuously for five or six weeks. Then introduce the reader; at first, one lesson a week, and then, after ten or twelve weeks, increasing the number of lessons from the reader until the grammar lessons have been completed and thoroughly reviewed.

*Second Unit.* Additional study of grammar, directed to the details of case government, use of the modal auxiliaries, of the subjunctive, and of word order. (The equivalent of lessons XXV to XXXVII in Otis's Essentials, or of part II in the Kansas edition of Joynes-Meissner.) Practice in writing German from dictation, at least eighteen exercises (one a week for a half-year, to occupy fifteen to twenty minutes each).

Reading and translation of 100 pages of connected prose and of Schiller's Wilhelm Tell, complete. The 100 pages of prose may be made up from the remainder of Brandt's or Hewett's Reader, the completion of Huss or Joynes-Meissner together with Zschokke's Der Zerbrochene Krug, Heyse's Die Blinden or Anfang und Ende, Storm's Immensee, Andersen's Maerchen, Grimm's Maerchen.

*Third Unit.* Review of grammar, with drill on the less usual strong verbs and on the idioms of tense and order. Composition work, consisting chiefly of paraphrases of the German used for translation.

Reading of 400 pages of standard German, with careful translation and critical understanding (Some portion of what is translated should always be read aloud in German.) Suitable works are: Freytag's Die Journalisten and Lessing's Minna von Barnhelm; Fouque's Undine; Hauff's Das kalte werz; Schiller's Der dreissigjährige Krieg; Freytag's Doktor Luther; Riehl's Burg Neideck; Goethe's Hermann und Dorothea.

**French.** One, two or three units.

*First Unit.* Rudiments of grammar; conjugation of the regular and the more usual irregular verbs; moods and tenses; use and positions of pronouns; partitive constructions. Careful drill in pronunciation. Reading of 100 pages of easy prose. Practice in writing and speaking very simple sentences.

*Second Unit.* All the essentials of accidence and syntax. Composition. Frequent dictation. Oral exercises. Reading of 300 to 350 pages of modern French.

*Third Unit.* Thorough review of grammar. Written exercises based upon grammatical points, and connected writing. Dictation. Practice in hearing and speaking French. Reading of 600 pages of fairly difficult modern French.

**Physical Geography.** One unit.

The course in physical geography should include a study of the following subjects:

1. The earth as a globe; shape of the earth, how proved; size, how measured; motions, how determined; map-making; different modes of projection.

2. The ocean; forms and divisions, depth, density, temperature; ocean movements, waves and currents; character of ocean floor; life in ocean; tides, character and causes; shore lines.

3. The atmosphere; chemical composition and how determined; pressure of, and how determined; circulation of, character and cause; storms, classification of, and cause.

4. Land, amount and distribution of; topographic charts; plains, kinds of, and development of; plateaus, kinds of, and development of; volcanos, distribution and character of; rivers, life-history of; glaciers, kinds and characteristics of.

**Physics.** One unit.

The candidate's preparation in physics should include:

1. Recitations on at least one standard text, such as Carhart and Chute's High-school Physics, Wentworth and Hill's Text-book of Physics, or Student's Manual of Physics by L. C. Cooley.

2. Experimental work, consisting of lecture-table demonstrations and individual laboratory work. The latter should comprise at least thirty-five exercises selected from such lists as are given in Laboratory Manual of Physics, by Cheston-Dean-Timmerman, or Cooley's Manual, mentioned above.

**Chemistry.** One unit.

Preparatory work in this subject should cover practically the work done in course I in the University. The student should have a good knowledge of (1) modern chemical theories; (2) the most important facts of chemical science; (3) the practical applications of chemistry to every-day life and to the useful arts. It is important that elementary physics be thoroughly understood before taking up the study of chemistry. About two-fifths of the time devoted to chemistry should be spent in actual laboratory work by the students individually, and it is not sufficient if the instructor performs the experiments in the presence of the class. Any good text-book, such as Remsen's Introduction to the Study of Chemistry (sixth edition), Newth's Inorganic Chemistry, or Introduction to General Chemistry, by H. C. Jones, may be used. Some of the abridged text-books are too elementary to fulfil the requirements of the University.

**Botany.** One unit.

A unit's course in botany should essentially follow the outline recommended in the Proceedings of the Seventh Annual Meeting of the North Central Association of Colleges and Secondary Schools. Detailed directions for such a course are given in Ganong's The Teaching Botanist, Stevens's Introduction to Botany, and Bergen's Foundations of Botany. Not less than two-thirds of the time should be devoted to laboratory work, and the remainder to recitations and discussions. Field excursions should be made, so that the students may know in their natural surroundings the plants already studied in the laboratory. Careful drawings and notes should be required in connection with the laboratory work.

**Zoology.** One unit.

Acceptable work in zoölogy must be of such a character that at least two-thirds of the time is spent in individual study of type specimens. The value of the study rests in the training given in independent observation and correlation of facts, and in the accurate recording of these facts by drawings and notes. Comparative work is of the greatest importance. The arthropods are the best group in Kansas upon which to work, and it is suggested that they be used to exemplify the general principles of structural relations and classification. For a laboratory guide, Marshall and Hurst's Practical Zoölogy is recommended, and as a text-book, Parker and Haswell's Manual of Zoölogy. Where much of the time is devoted to the study of insects, Hunter's Elementary Studies in Insect Life may be used as a guide, and Comstock's Manual of Entomology and Weed's Life-histories of American Insects as reference books.

**Greek and Roman History.** One unit.

An amount of work equivalent to the texts of Wulfson, West, Myers, or, where Greek and Roman history are taught separately, Botsford or Morey.

**English History.** One unit.

An amount of work equivalent to the texts of Larned, Coman and Kendall, or Montgomery, Channing and Higginson.

It is expected of all students that they shall have had, in addition to the work in the text-book, adequate preparation in geography, and a certain amount of reference work, outside reading, and note-taking.

*Note.*—The American Historical Association, through the report of its Committee of Seven, various local associations, through concurrent reports, and most universities and colleges have recommended the following course of study in history for all secondary schools:

*First year.*—Ancient history to 800 A. D.

*Second year.*—Mediæval and modern European history.

*Third year.*—English history.

*Fourth year.*—American history and civil government.

This plan is strongly recommended to the schools sending students to the University of Kansas. Units of this scheme will be accepted for entrance when offered by entering students, and it is hoped and expected will replace all other requirements as soon as practicable.

**American History.** One unit.

This is the course recommended by the Committee of Seven of the American Historical Association in their report on the study of history in schools. In order to receive entrance credit, the course must not be given before the third year in the high school, and must be based upon some such approved text as Channing's Student's History of the United States or McLaughlin's History of the American Nation.

**Economics.** One unit.

The general principles of economic science, with some of its applications. The instructor, as far as possible, should approach the subject from the concrete rather than from the abstract, and should verify every principle by practical examples. Blackmar's Economics (or its equivalent) should be used as a text and guide. Special attention should be given to books II and III. Chapters II and III of book I, and chapters I, II and III of book III, require special analysis by the instructor.

A limited amount of collateral reading should be required, and easy investigations of local economic conditions should be advised.

### Admission to Advanced Standing.

The regulations governing admission to advanced standing in the College are administered by a committee of the Faculty, which examines into the merits of each case presented to it and either credits the applicant with a certain rank or recommends him to the heads of departments for advanced credit or examination.

*Application for such advanced standing must be made at the time of matriculation.*

Undergraduates from other colleges must present certificates of honorable dismissal, or other satisfactory evidence of good character.

Some of the requirements of the College are indicated as follows:

I. By examination. A candidate may be admitted to the Sophomore, Junior or Senior class, if he appear on examination to be prepared in the following studies: (1) In the studies required for admission to the Freshman class. (2) In all such studies as he would have pursued if he had entered at the beginning of the course.

*All applications for examination for advanced standing must be made during the opening week of the first term. College credit will be given for work done in preparatory schools upon examination only.* The times and place of such examinations are the same as listed on page 68.

II. Without complete examination. Graduates or students from the higher classes of other colleges may be admitted to advanced standing upon the presentation of a certificate stating in detail the work done, under such conditions as the Faculty may determine to be just in each case, upon consideration of the applicant's previous course of study and of the evidence he presents of his proficiency in that course.

It is required of all candidates for the bachelor's degree who have entered the University on advanced standing from other colleges that they do not less than thirty hours of Junior or Senior work in residence at the University.

Students leaving the University before obtaining the bachelor's degree, who have spent three full years in residence at the University, and lack but fifteen hours of graduation, may receive not to exceed fifteen hours' credit from an institution of equal standing, provided they receive the bachelor's degree or a higher degree from such institution.

### Special Students.

Opportunity is given in the College for the admission of persons of mature years who desire to pursue some special line of work, without following any prescribed course or becoming candidates for a degree.

The admission of such special students is directly under the control of a committee of the Faculty, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for classification as special students must present satisfactory evidence of proper preparation for the studies desired and must also meet such other requirements as may be fixed by the Faculty.

### Registration and Enrolment.

All candidates for admission having certificates from accredited schools and all students of the College intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 6 to 9, inclusive, 1905. Registration at a later date will be permitted only on the presentation of a satisfactory reason for the delay.

The Dean of the College is charged with the execution of all University and Faculty rules relating to the enrolment of students in classes and their choice of studies.

*Time of Application for Enrolment.* At least two weeks before the end of each term, all students in residence are required to file with the Dean applications for enrolment in the courses which they desire to pursue during the following term.

*Completion of Requirements.* A student may not be enrolled in any course in advance of any other which he has yet to take, and which it is possible for him to carry at the time.

### Examinations.

Examinations will be held for all students during the regular recitation hours of the last days of the term (or half-term), each class in its proper recitation hour; they may occupy not more than one hour for each hour per week that the course has occupied. Examinations shall be held for all classes on the last day of the examination period.

Special examinations will be given only during examination weeks and during the opening week of the fall term.

All requests for special examinations must be approved by the Dean.

*Failures.* All failures in examinations must be made good at the earliest possible date, not more than one year from date of the failure. If not made good by the time of the recurrence of the course, the work must be done in class.

Absence from examination or failure in more than one-third of his work, in any one term, severs a student's connection with the University.

*Conditions.* A student who has failed to pass in any course may be conditioned upon the same by the Dean of the school, if in the opinion of the instructor it can be made good by the next examination period without detriment to the regular work of the student. A condition which is not made up at the next examination period is placed again in the list of failures.

*Inadequate Preparation.* When students show by their current work insufficient entrance preparation in any study, they may be required to make good such deficiency in any manner prescribed by their instructors.

### Scholarships.

The following scholarships are offered to students in the College:

1. The Lucinda Smith Buchan Memorial Scholarship. Established by the alumnæ members of the Pi Beta Phi sorority. A loan of $200 for three years without interest. Open to young women of the Junior and Senior classes of the College. This scholarship was doubled in 1904–'05. Held by Misses Irene Crawford and Lydia Lindsey.

2. The Marcella Howland Memorial Scholarship. Sixty dollars a year. Open to young women of the Junior and Senior classes of the College.

3. The Kansas City Branch of the Association of Collegiate Alumnæ Scholarship. Two hundred dollars a year. Awarded to young women, who are chosen from graduates of the Kansas City high school. Held in 1904–'05 by Miss Irene Gilchrist, of Kansas City, Mo.

4. A research table in the Marine Biological Laboratory, at Woods Hole, Mass., supported by Mrs. Sara T. D. Robinson, is open to women of the University who have specialized in the sciences and given evidence that they are fitted to make the best use of it. Applications for the use of this table should be sent Mrs. Sara T. D. Robinson, Oakridge, Lawrence, Kan.

5. A research scholarship in systematic entomology is maintained by Prof. F. H. Snow. Two hundred dollars a year.

### Memorial Fund.

May Sexton Agnew Memorial Fund. A fund of $500 has been given the library of the University by the Kappa chapter of Kappa Alpha Theta fraternity. The income of this fund is to be devoted to the purchase of books in English literature.

### Teacher's Diploma.

The teacher's diploma of the University may be given to A. B., A. M. and Ph. D. graduates of the University on the following conditions:

1. *Special Knowledge.* The completion of at least twenty hours of college work in the subject, or the closely allied subjects, that the candidate proposes to teach; the ultimate decision as to the candidate's proficiency to rest with the head of the department in which the major work is taken.

2. *Professional Knowledge.* The completion of twelve and one-half hours' work in the department of education.

3. *Amount of Work Offered.* The candidate for the A. B. degree, who is at the same time a condidate for the teacher's diploma, shall be required to offer five hours of additional undergraduate work.

4. *Grade of Scholarship.* The teacher's diploma shall be granted only to graduates whose scholarship in at least all of their undergraduate class work averages grade II.

On presentation of the University teacher's diploma, the State Board of Education will issue a three-year state teachers' certificate. At the expiration of the three-year certificate, a life certificate will be issued, if the candidate has taught successfully during two of the three years.

## Expenses.

By legislative enactment, the following fees must be charged each student of the College of the University, in lieu of all other fees of each school year, payable at time of matriculation:

| | |
|---|---|
| Matriculation fee, payable but once | $5 00 |
| Incidental fee | 10 00 |

To students residing in states or territories other than Kansas, the fee charged must be as follows:

| | |
|---|---|
| Matriculation fee, payable but once | $10 00 |
| Incidental fee | 20 00 |

At graduation, a diploma fee of five dollars is required.

**Laboratory Supplies and Fees.** All the laboratories of the University and their equipment of power, engines, machinery, desks, tables, balances, microscopes, models and complete apparatus are at the disposal of students, under the direction of their instructors. These desks, benches and tables will be further provided with individual sets of tools, sets of working apparatus, and equipment. At the end of the course, or at the discretion of the instructor, all the

individual equipment in good order must be returned. Such as may have been lost, damaged, broken or destroyed by the student must be paid for by him at that time.

Material and apparatus of every kind consumed, wasted or broken in the manifold experiments and practices in laboratories must be paid for by the student.

For the economic and prompt supply of such material, coupon books, good in all departments, are furnished at the business office, in amounts of five dollars and two dollars. Any coupons unused are redeemable in cash at the Secretary's office at the end of the course.

**Other Expenses.** There are no dormitories connected with the University. Students find accommodations in the boarding-houses and homes in Lawrence. Information concerning the location of rooming and boarding-places may be had at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at $4 a week. Some persons who furnish plain rooms and good, plain food receive students at $3 a week. Day board in private families and at city restaurants may be obtained for $2.75 to $4 a week. Day board in clubs varies from $2.50 to $3 a week. Furnished rooms, usually occupied by two students, range from $4 to $15 a month. Unfurnished rooms rent for $1.50 to $3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can attend the University for very little cost in money.

The following table shows the estimated expenses of a student of the College for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends upon the tastes and habits of the student:

| | *Low.* | *Average.* |
|---|---|---|
| Board | $100.00 | $120.00 |
| Room | 20.00 | 40.00 |
| Books and stationery | 8.00 | 15.00 |
| Laundry | 8.00 | 20.00 |
| Matriculation and other fees | 15.00 | 15.00 |
| Incidentals | 15.00 | 50.00 |
| Totals | $166.00 | $260.00 |

**Self-help.** Many students find work in private families, in offices, and in various occupations, by means of which they defray a portion of their expenses. Some students have earned their entire expenses while in attendance, and have made good records at the

same time; other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they came. If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. The University cannot guarantee work to any student, but will lend every possible assistance in finding employment. The University maintains an employment bureau, where the names of those seeking work and of those desiring workers are recorded. Students desiring places where they may help themselves are advised to apply to the Registrar of the University or to the University Y. M. C. A. or Y. W. C. A.,

## Accredited Preparatory Schools
### for 1904-'05.

Schools printed in italics offer courses of study which meet all the requirements for admission to the Freshman class of the College.

Schools not printed in italics fall short of full preparation by not more than three units.

| *Name of high school.* | *Superintendent.* | *Principal.* |
|---|---|---|
| *Abilene* | W. B. Hall | B. C. Biggart, A. B. |
| *Albuquerque, N. M.* | A. B. Stroup | J. A. Miller. |
| Anthony | J. H. Clement, A. B. | Clara Gilmer. |
| *Argentine* | H. P. Butcher | Frank Agrelius. |
| *Arkansas City* | L. W. Mayberry, A. B. | Helen Moffet, A. B. |
| *Atchison* | Nathan T. Veatch | A. H. Speer, A. B. |
| *Atchison Co., Effingham.* | | John W. Wilson, A. B. |
| Augusta | Charles W. Pratt | |
| Axtell | R. E. Long | Avis Stanley. |
| *Beaverhead Co., Dillon, Mont.* | J. A. Koontz, A. B., | Elizabeth W. Hawley. |
| Belle Plaine | H. C. Jent | Lulu Grosh, A. B. |
| *Belleville* | J. C. Wright | H. J. Mummau. |
| *Beloit* | C. A. Shively | C. H. Taylor. |
| Blue Mound | A. S. Hiatt, A. B | A. S. Hiatt, A. B. |
| Blue Rapids | William H. Andrews, A. B. | Mrs. Annie Cockerill. |
| *Burlingame* | W. L. Holtz, A. B | Olive Stewart, A. B. |
| *Burlington* | W. A. Stacey, B. S | Alice Spalding, A. M. |
| Burrton | Robert N. Halbert, Ph. B. | D. L. Swanstrom, A. B. |
| *Carbondale* | C. A. Deardorff, M. E. | Cora Silvernail, A. B. |
| Centralia | N. F. Daum, A. B | Bertha Roberts. |
| *Chanute* | W. E. Royster | J. A. Cannan. |
| *Chase Co., Cottonwood Falls* | | B. F. Martin. |
| Cherryvale | A. J. Lovett, A. B | Bennett Grove. |
| *Clay Co., Clay Center* | | S. A. Bardwell. |
| Clifton | G. B. Buikstra, A. B | Mrs. Hart, A. M. |
| Clyde | C. M. Ware | |
| Coffeyville | William M. Sinclair | Anna Paterson. |
| Colony | John B. White | |
| *Concordia* | A. B. Carney | Benjamin Ward, A. B. |
| *Crawford Co., Cherokee.* | | W. S. Pate. |
| *Decatur Co., Oberlin* | | Harlan Q. Banta, A. M. |
| Delphos | M. S. Shaible, B. S. | Henrietta Douthart, A. B. |
| *Dickinson Co., Chapman.* | | Homer S. Myers, A. M. |
| Dodge City | C. A. Smith | Carl Miller. |
| Downs | B. K. Farrar, B. S | Kate Clark, A. B. |
| *El Dorado* | C. A. Strong | J. A. Hall, A. B. |
| *Ellsworth* | E. T. Fairchild | Lila K. McCatter. |
| *El Reno, Okla* | F. N. Howell, A. B | D. F. Koontz. |
| Elsmore | M. L. Cotton | M. L. Cotton, A. B. |
| *Emporia* | L. A. Lowther, A. B. | J. H. Sawtell, A. B. |

| *Name of high school.* | *Superintendent.* | *Principal.* |
|---|---|---|
| *Eureka* | B. E. Lewis, A. M | C. E. Carpenter, A. M. |
| *Eureka (Southern Kansas Academy)* | | Geo. C. Snow, A. B. |
| Everest | H. W. Hoffman, A. B. | H. W. Hoffman, A. B. |
| Florence | | C. E. St. John. |
| *Fort Scott* | D. M. Bowen, A. B. | W. C. Lansdon, A. B. |
| Frankfort | M. G. Kirkpatrick | Harriet Landers. |
| Fredonia | I. L. Garrison, B. S. | W. I. Mathews. |
| Galena | Leslie T. Huffman | L. J. Pickering, B. S. |
| *Garden City* | A. C. Wheeler | Nettie M. Lawrence, A. B. |
| *Garnett* | C. H. Oman, A. B. | George Nickols. |
| *Girard* | H. W. Shideler, A. B. | Lillian Bell, A. B. |
| *Gove Co., Gove City* | | S. E. Lee. |
| *Great Bend* | Warren Baker | Mrs. Eva G. Clark, A. M. |
| Gypsum | A. R. Manning | A. R. Manning. |
| Halstead | C. O. Smith | Orrell McCroskey, A. B. |
| *Hays* | W. H. Keller | |
| Herington | W. W. Jones | Lavonia M. Donica. |
| *Hiawatha* | F. M. Hammitt, A. B. | George Pinney, A. B. |
| *Hiawatha Academy* | | G. A. Hoffman, A. M. |
| *Holton* | Edwin L. Holton, A. B. | S. A. Norris, A. B. |
| *Horton* | J. O. Hall, A. B. | Inez M. Chapman, A. B. |
| *Howard* | Irwin Stimmel, Ph. B. | H. D. Paynter, A. M. |
| Humboldt | J. E. Cook | H. M. Cunningham. |
| *Hutchinson* | Richard R. Price, A. M. | C. A. Wagner, A. B. |
| *Iola* | (Miss) Clifford Mitchell | L. H. Wishard. |
| *Joplin, Mo* | W. P. Roberts | L. L. Liehlita, A. M. |
| *Junction City* | W. S. Heusner, A. M. | Chas. S. Robbins, A. M. |
| *Kansas City, Kan.* | M. E. Pearson, B. D. | W. C. McCroskey, A. B. |
| *Kan. City, Mo., Central* | J. M. Greenwood, Ph. D. | I. I. Cammack. |
| " *Man. Tr.* | " | E. D. Phillips, Ph. M. |
| " *Westport,* | " | S. A. Underwood. |
| Kingman | Alvin W. Ault, A. B. | Margaret Benedix. |
| Kinsley | D. A. Baugher | D. A. Baugher. |
| *Labette Co., Altamont* | | W. M. Kyser, A. B. |
| La Cygne | J. E. Chamberlain | Edna Boyd. |
| Larned | W. S. Robb, A. B. | Agnes Unruh, A. B. |
| *Lawrence* | F. P. Smith, A. M | F. H. Olney, A. B. |
| *Leavenworth* | George W. Kendrick | W. A. Evans. |
| Le Roy | G. E. Brown | Mary M. Baird. |
| *Lewis Academy, Wichita* | | J. M. Naylor, Ph. D. |
| Lyndon | F. W. McCabe, A. B. | Elizabeth Gernon, A. B. |
| *Mankato* | F. W. Simmonds, M. S. | Agnes Graham. |
| *Marion* | H. H. Van Fleet, A. B. | Clara Morris. |
| *Marysville* | C. B. Myers, A. B. | A. J. Clark, A. B. |
| Medicine Lodge | A. B. Honnold, Ph. B | |
| *Minneapolis* | A. F. Senter | D. O. Smith. |
| Moline | Charles W. Pennel | |
| *Montgomery Co., Independence* | | S. M. Nees, B. S. |
| Moran | Guy M. Tredway | Guy M. Tredway. |
| Mound City | C. L. King | C. L. King. |
| *McPherson* | R. M. Killion, A. B. | Mame A. Curry. |
| Neodesha | John W. Brown | J. F. Steffen. |
| *Newton* | D. F. Shirk | Mrs. A. N. Turner. |

| *Name of high school.* | *Superintendent.* | *Principal.* |
|---|---|---|
| *Norton Co., Norton* | ..... | W. G. Riste. |
| Nortonville | E. H. McMath, A. B | ..... |
| *Olathe* | R. L. Parker, A. M | G. M. Husser, Ph. B. |
| *Oklahoma City, Okla* | Ed. S. Vaught, B. S | ..... |
| *Osage City* | J. T. Albin, A. M | Vincent C. Poor. |
| Osawatomie | ..... | Beulah Roberts, A. B. |
| Osborne | C. N. Poe, A. M. | Nettie Beatty. |
| Oskaloosa | J. H. Gibson | Mayme Hamilton. |
| *Ottawa* | A. L. Bell, Ph. B. | H. P. Study, A. B. |
| *Paola* | E. D. George, A. B | F. K. Ferguson, B. S. |
| *Parsons* | J. A. Higdon | Louise M. Schaub. |
| *Peabody* | A. H. Newton | Louise Doerle. |
| *Pittsburg* | A. H. Bushey | C. W. Kline, A. B. |
| Pleasanton | John Groendyke, B. S. | Rachel Mentzer. |
| *Pratt* | E. D. Thompson | Mabel Miller, A. B. |
| *Prosso Preparatory School, Kansas City, Mo.* | | J. P. Richardson, A. B. |
| *Reno Co., Nickerson* | ..... | E. B. Smith, A. B. |
| *Rosedale* | George E. Rose, B. D | Anna D. White, A. B. |
| *Russell* | T. A. Edgerton | W. L. Bowersox. |
| Sabetha | George O. Kean | Susie M. Guild, A. B. |
| *Salina* | George R. Crissman, A. B | John Lofty, A. B. |
| *Scott Co., Scott City* | ..... | J. C. Anderson, B. S. |
| Scranton | John Linn | Mary J. Chapman. |
| Sedgwick | R. A. Hampshire, M. S. | R. A. Hampshire, M. S. |
| *Seneca* | C. C. Starr, B. S. | Pearl McCurdy. |
| *Sheridan Co., Hoxie* | ..... | R. G. Mueller, A. B. |
| *Smith Center* | H. H. Gerardy | T. H. Hooper, A. B. |
| Solomon | ..... | Rhoda Field, A. B. |
| Stafford | A. L. Stickel, A. B | ..... |
| *Sterling* | George L. Seeley, A. B | Jennie M. Inches, Ph. B. |
| *Stillwater, Okla* | W. C. Jamieson, A. B | Martha Dunn. |
| *St. John's M. S., Salina* | S. M. Griswold, S. T. D | R. H. Mize, A. B. |
| *St. Joseph, Mo* | ..... | R. H. Jordan. |
| St. John | ..... | Nellie Funkhouser. |
| *St. Mary's* | George T. Beach, A. M | E. S. Francis. |
| Stockton | G. M. Brown | ..... |
| *Sumner Co., Wellington* | ..... | Thomas W. Butcher, A. M. |
| Syracuse | E. T. Ewing, A. B | D. E. McCrory. |
| *Thomas Co., Colby* | ..... | W. E. Ray, A. M. |
| *Topeka* | L. D. Whittemore, A. M | H. L. Miller, A. B. |
| Valley Falls | E. B. Gift | Maud Myers. |
| Wa Keeney | Charles H. Mull | Katherine Hend. |
| Wamego | A. J. Beatty, B. S. | Grace Eaton, A. B. |
| *Warrensburg, Mo* | W. E. Morrow, B. S. D | C. A. Burk, Pd. M. |
| *Washington* | W. D. Vincent, A. B | Carl H. Myers, A. B. |
| Waterville | S. L. Soper | Esther McKelvy. |
| *Wentworth Mil. Acad., Lexington, Mo.* | S. Sellers, A. M | W. M. Haze, A. M. |
| Wetmore | W. W. Wood, A. B | Hulda S. Ise. |
| *Wichita* | R. F. Knight, Ph. B | B. F. Dunkin, A. B. |
| Williamsburg | J. F. Lyon | Grace Thestrup. |
| Wilson | H. Coover | Katherine Wilder. |
| *Winfield* | J. W. Spindler, A. M | S. C. Bloss, A. B. |

# The Course of Study

**Leading to the Degree of Bachelor of Arts.**

### Amount of Work Required.

To secure the degree of bachelor of arts the candidate is required to have completed 126 hours of work, of which 120 hours must be regular class work. The six additional hours required must be distributed as follows:

In the Freshman year, one hour of hygiene and one hour of gymnasium practice, the first term; and two hours of gymnasium practice the second term. In the Sophomore year, one hour of gymnasium practice in each term.

The sixty hours of class work required during the Freshman and Sophomore years must be distributed according to the plan described below.

The sixty hours of class work required during the Junior and Senior years may be elected by the candidate without any restriction, except that not more than twenty hours may be taken under one instructor.

### Amount of Work to be Carried at One Time.

Students of the College must be enrolled in not less than fourteen nor more than eighteen hours of work, but all applications for enrolment are subject to the approval of the Dean.

When the past record or current work of a student indicates that he is unable to carry advantageously the amount of work permitted by the above regulation, he may be limited in his enrolment to such extent as may be considered just in his case.

The Faculty urgently advises students to confine themselves to the average number of fifteen hours of class work, and thus devote four full years to the completion of their undergraduate work. Experience has shown that the crowding of the undergraduate course results in serious loss in the quality of the work accomplished. The excess over fifteen hours permitted by the rule should be used for making up entrance deficiencies.

### Required and Elective Courses.

The University regards the work of the first two years of the College course as essentially connected with the preparatory work, as preliminary fundamental work necessary to the more specialized

courses of the last two years. The preparatory work and the work of the Freshman and Sophomore years are, therefore, considered together.

Fifteen units are required for admission, as given in detail on page 70. Of these 15 preparatory units 5½ are specifically required, 6 are required by group, while the remaining 3½ are chosen without restriction from the list of entrance subjects.

During the first two years in the College sixty hours of class work, fifteen each term, must be completed. Five hours of such work constitute what is known as a "College unit" (see page 69). Three College units constitute the class work of each term. These 12 College units added to the 15 entrance units make a total of 27 units which must be completed, in the preparatory school and the College, before the end of the Sophomore year.

Of the 12 College units to be completed during the Freshman and Sophomore years, one, elementary rhetoric, is specifically required, unless it is offered for entrance as a fourth year of English. The remaining 11 units are to be chosen from the courses open to Freshmen and Sophomores on the conditions that not more than twenty hours may be taken in one department and that from each group a certain number of units must have been completed, either in the preparatory school or the College, before the end of the Sophomore year. The number of units so required is given with the names of the groups in the following table.

A course may not be chosen which substantially duplicates the work of a course which has been offered for entrance credit.

## Table of Courses Open to Freshmen and Sophomores.

### FIRST TERM.

| Group. | Department. | No. | Course. | Hrs. | Days. | Time. |
|---|---|---|---|---|---|---|
| English Group: Four units required in preparatory school or college. | English Language. | 1 | Rhetoric | 2 | T., T. | 8, 9, 10:15, 4:30. |
| | English Literature. | 1 | English Literature | 3 | M., W., F. | 8, 9, 10:15, 4:30. |
| | | 3 | Eighteenth Century Literature. | 3 | M., W., F. | 2:30. |
| | Public Speaking. | 1 | Spoken Discourse | 3 | M., W., F. | 1:30. |
| | | 2 | Argument and Debate | 2 | T., T. | 1:30. |
| Mathematics Group: Three units required in preparatory school or college. | Mathematics. | 1 | Solid Geometry | 3 | M., W., F. | 1:30. |
| | | 2 | College Algebra | 3 | M., W., F. | 8, 9, 10:15, 11:15, |
| | | 3 | Plane Trigonometry | 2 | T., T. | 1:30, 2:30, 3:30. |
| | | 4 | Analytics I | 2 | T., T. | 9, 2:30. |
| | | 5 | Calculus I | 3 | M., W., F. | 9, 2:30. |
| | | 6 | Analytics II | 2 | T., T. | |
| | | 7 | Calculus II. | 3 | M., W., F. | 10:15, 1:30. |
| Physical Science Group: Three units required in preparatory school or college. | Chemistry. | 1 | Elementary Chemistry I. | 3 | M., W., F. | 10:15–12:15. |
| | | 2 | Inorganic Chemistry | 5 | Daily. | 8–10. |
| | Physics. | 1 | Elementary Physics | 3 | M., W., F. | 10:15–12:15. |
| | | 3 | Physical Measurements. | 2 | T., T. | 9. |
| | Geology. | 1 | Elementary Geology | 3 | M., W., F. | 11:15. |
| Biological Science Group: Three units required in preparatory school or college. | Zoology. | 1 | Elementary Zoology I. | 3 | M., W., F. | 1:30–3:30. |
| | | 2 | Morphological Zoology I | 2 | T., T. | 1:30–3:30. |
| | Botany. | 1 | Elementary Botany I | 2 | T., T. | 1:30–3:30. |
| | | 4 | Plant Histology | 3 | M., W., F. | 1:30–3:30. |
| | | 5 | Plant Physiology | 2 | T., T. | 1:30–3:30. |
| | Entomology. | 1 | Elementary Entomology I. | 2 | T., T. | 1:30–3:30. |
| | | 3 | Systematic Entomology I. | 3 | M., W., F. | 1:30–3:30. |
| | Philosophy. | 1 | Elementary Psychology | 3 | M., W., F. | 9. |
| | | 2 | Introduction to Philosophy | 2 | T., T. | 9. |
| Historical Group: Three units required in preparatory school or college. | European History. | 1 | English History I | 2 | T., T. | 8, 9, 2:30. |
| | | 3 | Greek History | 3 | M., W., F. | 10:15, 11:15. |
| | | 5 | Mediæval History | 3 | M., W., F. | 8, 9, 11:15, 2:30. |
| | Economics. | 1 | Elementary Economics | 3 | M., W., F. | 3:30. |
| | | 2 | Economic History of England | 3 | M., W., F. | 9. |
| | American History. | | | | | |

| Group. | Department. | No. | Course. | Hrs. | Days. | Time. |
|---|---|---|---|---|---|---|
| Foreign Language Group: Six units required in preparatory school or college. | Latin. | 3 | Vergil | 5 | Daily. | 8. |
| | | 4 | Cicero and Livy | 5 | " | 9. |
| | | 4a | Cicero's De Senectute | 3 | M., W., F. | 11:15. |
| | | 4b | Livy | 2 | T., T. | 11:15. |
| | | 5 | Horace's Odes | 3 | M., W., F. | 1:30. |
| | | 7 | Cicero's Letters | 3 | M., W., F. | 10:15. |
| | | 8 | History of Roman Literature | 2 | T., T. | 10:15. |
| | Greek. | 1 | Elementary Greek | 4 | M., T., W., T. | 9. |
| | | 3 | Homer's Iliad | 3 | M., W., F. | 9. |
| | | 4 | Thucydides | 2 | T., T. | 9. |
| | | 7 | Apology and Crito | 3 | M., W., F. | 11:15. |
| | | 8 | Sophocles | 2 | T., T. | 11:15. |
| | | 19 | Greek in English | 3 | M., W., F. | 10:15. |
| | | 22 | New Testament Greek II | 2 | T., T. | 10:15. |
| | | 27 | Greek Art I | 1 | M. | 4:30. |
| | German. | 1 | Outline of Grammar | 5 | Daily. | 8, 9, 11:15, 1:30. |
| | | 3 | German Prose | 5 | " | 8, 9, 11:15, 3:30. |
| | | 5 | Composition | 5 | " | 10:15. |
| | | 6 | Goethe's Faust | 3 | M., W., F. | 11:15. |
| | | 7 | Goethe's Iphigenie | 2 | T., T. | 11:15. |
| | French. | 1 | Elementary French I | 5 | Daily. | 8, 9, 10:15, 11:15, 1:30. |
| | | 2 | Elementary French II | 5 | " | 9. |
| | | 3 | Modern French Prose | 3 | M., W., F. | 9, 10:15. |
| | | 4 | Composition | 2 | T., T. | 10:15. |
| | | 7 | Moliere | 3 | M., W., F. | 11:15. |
| | | 8 | Composition and Conversation | 2 | T., T. | 11:15. |
| | Spanish. | 1 | Elementary Spanish I | 5 | Daily. | 10:15. |
| | | 3 | Cervantes | 3 | M., W., F. | 2:30. |

## Table of Courses Open to Freshmen and Sophomores.

### SECOND TERM.

| Group. | Department. | No. | Course. | Hrs. | Days. | Time. |
|---|---|---|---|---|---|---|
| English Group: Four units required in preparatory school or college. | English Language. | 2 | Rhetoric | 3 | M., W., F. | 8, 9, 10:15, 4:30. |
| | English Literature. | 2 | English Literature | 2 | T., T. | 8, 9, 10:15, 4:30. |
| | | 3 | Eighteenth Century Literature, | 3 | M., W., F. | 11:15. |
| | Public Speaking. | 1 | Spoken Discourse | 3 | M., W., F. | 1:30. |
| | | 2 | Argument and Debate | 2 | T., T. | 1:30. |
| Mathematics Group: Three units required in preparatory school or college. | Mathematics. | 2 | College Algebra | 3 | M., W., F. | 8, 3:30. |
| | | 3 | Plane Trigonometry | 2 | T., T. | 8, 3:30. |
| | | 4 | Analytics I. | 2 | T., T. | 8, 9, 10:15, 3:30. |
| | | 5 | Calculus I. | 3 | M., W., F. | 8, 9, 10:15, 3:30. |
| | | 6 | Analytics II | 2 | T., T. | 9, 2:30. |
| | | 7 | Calculus II. | 3 | M., W., F. | 9, 2:30. |
| | | 8 | Calculus III. | 3 | M., W., F. | 1:30. |
| | Civil Engineering. | 5 | Surveying | 5 | Daily. | 11:15. |
| Physical Science Group: Three units required in preparatory school or college. | Chemistry. | 1 | Elementary Chemistry | 2 | T., T. | 10:15-12:15. |
| | | 3 | Qualitative Analysis | 5 | Daily. | 8-10. |
| | Physics. | 2 | Elementary Physics | 2 | T., T. | 10:15-12:15. |
| | | 4 | Physical Measurements | 3 | M., W., F. | 9. |
| | Geology. | 1 | Elementary Geology | 3 | M., W., F. | 11:15. |
| Biological Science Group: Three units required in preparatory school or college. | Zoology. | 2 | Elementary Zoology II | 2 | T., T. | 1:30, 3:30. |
| | | 4 | Morphological Zoology II. | 3 | M., W., F. | 1:30-3:30. |
| | Botany. | 2 | Elementary Botany II. | 3 | M., W., F. | 1:30-3:30. |
| | | 3 | Cryptogamic Botany | 3 | M., W., F. | 1:30-3:30. |
| | Entomology. | 2 | Elementary Entomology II. | 3 | M., W., F. | 1:30-3:30. |
| | | 4 | Systematic Entomology II | 2 | T., T. | 1:30-3:30. |
| | Philosophy. | 1 | Elementary Psychology | 3 | M., W., F. | 9. |
| | | 2 | Introduction to Philosophy | 2 | T., T. | 9. |
| Historical Group: Three units required in preparatory school or college. | European History. | 2 | English History II. | 2 | T., T. | 8, 9, 2:30. |
| | | 4 | Roman History | 3 | M., W., F. | 10:15, 11:15. |
| | | 6 | Modern European History | 3 | M., W., F. | 8, 9, 11:15, 2:30. |
| | Economics. | 1 | Elementary Economics | 2 | T., T. | 3:30. |
| | | 3 | Economic History United States, | 3 | M., W., F. | 9. |
| | American History. | 1 | United States Government | 3 | M., W., F. | 9. |

| Group. | Department. | No. | Course. | Hrs. | Days. | Time. |
|---|---|---|---|---|---|---|
| Foreign Language Group: Six units required in preparatory school or college. | Latin. | 3*a* | Vergil | 3 | M., W., F. | 11:15. |
| | | 4*a* | Cicero's De Senectute | 3 | M., W., F. | 8. |
| | | 4*b* | Livy | 2 | T., T. | 8. |
| | | 5 | Horace's Odes | 3 | M., W., F. | 9. |
| | | 6 | Terence | 2 | T., T. | 9. |
| | | 9 | Horace (Satires and Epistles) | 2 | W., F. | 10:15. |
| | | 10 | Roman Private Life | 1 | M. | 10:15. |
| | | 11 | Prose Composition | 2 | T., T. | 10:15. |
| | Greek. | 2 | Anabasis | 4 | M., T., W., T. | 9. |
| | | 5 | Homer's Odyssey | 3 | M., W., F. | 9. |
| | | 6 | Herodotus | 2 | T., T. | 9. |
| | | 9 | Euripides and Æschylus | 3 | M., W., F. | 11:15. |
| | | 10 | Demosthenes | 2 | T., T. | 10:15. |
| | | 20 | Attic Greek | 2 | T., T. | 11:15. |
| | | 21 | New Testament Greek | 3 | M., W., F. | 10:15. |
| | | 28 | Greek Art II | 1 | M. | 4:30. |
| | German. | 2 | German Reader | 5 | Daily. | 8, 9, 11:15, 1:30. |
| | | 4 | Schiller's Wallenstein | 5 | " | 8, 9, 11:15, 3:30. |
| | | 8 | Lessing's Nathan der Weise | 3 | M., W., F. | 10:15, 11:15. |
| | | 9 | Schiller's Die Braut von Messina | 2 | T., T. | 10:15, 11:15. |
| | French. | 1 | Elementary French I | 5 | Daily. | 11:15. |
| | | 2 | Elementary French II | 5 | " | 8, 9, 10:15, 11:15, 1:30. |
| | | 3 | Modern French Prose | 3 | M., W., F. | 10:15. |
| | | 4 | Composition | 2 | T., T. | 10:15. |
| | | 5 | Prose and Poetry | 3 | M., W., F. | 9 or 10:15. |
| | | 6 | Corneille and Racine | 2 | T., T. | 1:30. |
| | | 9 | Advanced Composition | 3 | M., T., F. | 10:15. |
| | Spanish. | 2 | Elementary Spanish II | 5 | Daily. | 10:15. |
| | | 4 | Classical Drama | 2 | T., T. | 2:30. |

## Courses of Instruction in the College.

### Undergraduate and Graduate.

### HUMAN ANATOMY.

Associate Professor HOXIE.
Demonstrator SMITH.

EQUIPMENT.

The department occupies the lower floor of Medical Hall, and uses the lecture-room on the upper floor. The dissecting-rooms are lighted by electricity. A reference library, *papier mache* models, and specimens preserved in formalin are provided for the assistance of students. Each student is furnished with a set of bones for home study. The material for dissection is preserved by the formalin-injection method and is very satisfactory.

ADVICE AS TO THE CHOICE OF COURSES.

Students of medicine are required to take courses 1, 2, 3, 4, and 5. The other courses are optional. To profit most from the study of anatomy, physics, Latin, Greek and some acquaintance with the use of the microscope are necessary prerequisites.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

1.—SYSTEMATIC STUDY OF THE LEG. Five hours, 1st half of 1st term, daily, 8 to 12:15. This course includes recitations, laboratory work, note-book making, (drawing), and modeling. The outlines and the important structure of the leg are drawn, and the bones modeled. The required books are Cunningham's Text-book of Anatomy and Barker's Laboratory Manual of Anatomy. Students are expected to furnish a satisfactory set of dissecting instruments, two white gowns, towels, and soap. Associate Professor Hoxie and Demonstrator Smith.

2.—SYSTEMATIC STUDY OF THE ARM. Five hours, 2d half of 1st term, daily, 8 to 12:15. A course similar to the preceding. Associate Professor Hoxie and Demonstrator Smith.

3.—SYSTEMATIC STUDY OF THE HEAD. Five hours, 1st half of 2d term, daily, 8 to 12:15. This course includes a macroscopic study of the brain and spinal cord. Associate Professor Hoxie and Demonstrator Smith.

4.—SYSTEMATIC STUDY OF THE TRUNK. Five hours, 2d half of 2d term, daily, 8 to 12:15. This course consists of the dissection of the body wall and includes a study of the viscera, including the

study and drawing of microscopic slides of the liver, kidney, heart, muscle, stomach wall, ileum (through a Peyer's patch), testis and ovary, lung. Associate Professor Hoxie and Demonstrator Smith.

5.—NEUROLOGY. Daily, 8 to 12:15, 1st half of 1st term. A study of the nervous system according to Cunningham's Text-book of Anatomy, pages 414–734; and of Barker's Manual, pages 242–247, 317–396. The following microscopic preparations are studied and drawn: peripheral nerve, spinal cord, medulla, cerebellar cortex, pons Varolii, cerebral cortex, retina (or eyeball), Schneiderian membrane. This microscopic work is a part of the work done in histology, and students not taking histology must do it by special appointment. Courses 1 to 4 are required for admission to this course. Associate Professor Hoxie.

6.—CROSS-SECTIONS. The study and drawing of serial sections of the various parts of the body. Daily, 8 to 12:15, by appointment. Credit: one-half term for each part successfully completed. Associate Professor Hoxie.

## ASTRONOMY.

(See Mathematics.)

## BOTANY.

Professor STEVENS.
Associate Professor BARBER.
Assistant Professor STERLING.
Mr. ——
Mr. ——

### EQUIPMENT.

The department is provided with laboratories and essential working appliances for general morphology, plant histology, systematic botany, herbarium, plant physiology, bacteriology. The equipment embraces microtomes, paraffin baths, etc., for histological work, simple and compound microscopes for each student, individual sets of apparatus for physiological experiments, and apparatus for carrying on bacteriological research according to the best methods. In connection with the laboratory for plant physiology is a workroom supplied with tools and machinery for the construction of apparatus as needed. There is a departmental library, in which are at hand the books of reference needed by the students in connection with their laboratory work, and the general library contains the leading botanical periodicals.

ADVICE AS TO CHOICE OF COURSES.

All courses in botany must be preceeded by course 1 or its equivalent in other schools. Course 2 is a natural complement to course 1. These two first courses taken together afford an introduction to the general field of botany. Students who enter the University with less than a high-school year in botany should consult with the department about the best first course in botany following their high-school preparation. Students who have completed a high-school year in botany may not take either course 1 or 2 for credit, for they are supposed to have covered the ground of these courses at the high school, and are prepared to enter courses 3, 4, 7, and 13, which are elementary in their several fields. Students who have taken course 1 will find in course 2 evidence of the usefulness of plant forms, structures, and behavior, and course 2 is therefore a logical sequel to course 1. But course 2 is not a prerequisite to the subsequent courses. The student should take course 3 following courses 1 or 2, or their high-school equivalent, if he wishes to get an intimate acquaintance with the morphology and life-histories of the different groups of plants, from the lowest to the highest; or course 4, if he wants to acquire histological technique and to understand the cellular structure of plants and how plants are equipped to perform their physiological functions, and to prepare himself for plant physiology in courses 5 and 6; or course 7, if he desires, first of all, to broaden his knowledge of the morphology and systemy of the flowering plants. If, after courses 1 and 2, the student wishes to elect two courses that would best enrich his general information about plants, courses 3 and 4 should be chosen. If a basis for a knowledge of sanitation is desired, courses 3 and 13, or 14 in place of 13, should be elected. Courses 1, 2, 3, 4, 5 and 7 are fundamental to scientific plant culture. Course 15 is designed to help those students who want a knowledge of the essentials of plant culture and the principles of selecting and arranging plants in the laying out and planting of grounds. Students who are preparing to teach botany in high schools should take courses 1, 2, 3, 4, 5, and 7.

COURSES FOR UNDERGRADUATES ONLY.

1.—Elementary General Morphology. Two hours, 1st term, Tuesday and Thursday, at 1:30 to 3:30. An introduction to the forms and parts of plants. This course, or its equivalent in other schools, is a prerequisite to all succeeding courses in botany. Laboratory work four hours a week, reading, recitations, and lectures. Open to all students of the College. Professor Stevens, Professor Barber, Mr. Sterling, and Mr. ———.

2.—Elementary Plant Ecology. Three hours, 2d term, Mon-

day, Wednesday, and Friday, at 1:30 to 3:30. A study of the ways in which the parts and organs of plants conform to their environment in the performance of their functions. Laboratory and field-work six hours a week, reading, recitations, and lectures. Open to all students of the College who have completed course 1 or its equivalent. Professor Stevens, Mr. Sterling, and Mr. ———.

3.—Cryptogamic Botany. Three hours, 2d term, Monday, Wednesday, and Friday, at 3:30 to 5:30. The life-histories of cryptogams, and an introduction to the study of reproduction of phanerogams. Laboratory six hours a week, reading, and lectures. Open to all students who have taken course 1 or its equivalent. Professor Barber, Mr. Sterling, and Mr. ———.

4.—Plant Histology. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30 to 3:30. A study of plant tissues, with special reference to their development and functions; plant products, their origin and physiological and biological significance; histological technique. Laboratory work six hours a week, recitations, and lectures. Open to all students of the College who have taken course 1 or its equivalent. Professor Stevens and Mr. ———.

5.—Elementary Plant Physiology. Two hours, 2d term, Tuesday and Thursday, at 1:30 to 3:30. An experimental study of the chief functions of plant tissues and organs. Especially designed to accompany or supplement course 4. Open to students who have taken or are taking course 4. Laboratory work four hours a week and recitations. Professor Stevens and Mr. ———.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

6.—Experimental Plant Physiology. Three hours, 2d term, Monday, Wednesday, and Friday, at 3:30 to 5:30. Laboratory work six hours a week, reading, and conferences. Open to Juniors and Seniors who have taken course 4. Professor Stevens.

7.—Systematic Botany. Phanerogams. Three hours or five hours, 1st term, Monday, Wednesday, and Friday, or Monday, Tuesday, Wednesday, Thursday, and Friday, 10:15 to 12:15. Laboratory work six hours a week, or ten hours. Open to Juniors and Seniors who have taken course 1 or an equivalent. Professor Barber.

8.—Systematic Botany. Cryptogams. Two hours, 1st term, Tuesday and Thursday, at 10:15 to 12:15. Laboratory work four hours a week. Open to Juniors and Seniors who have taken course 3 or its equivalent. Professor Barber.

9.—Problems in Taxonomy. 1st or 2d term, or both terms, by appointment. Plant relationships and classification, in which selected groups of plants are critically studied. Professor Barber.

10.—Problems in the Morphology of Thallophytes, Bryophytes, and Pteridophytes. By appointment, 1st or 2d term, or both terms. Laboratory work and reading. Professor Barber.

11.—Problems in the Morphology of Spermatophytes. By appointment, 1st or 2d term, or both terms. A study of the forms of plant members under varying environment. Laboratory work, field-work, and reading. Professor Stevens.

12.—Problems in Histogenesis. By appointment, 1st or 2d term, or both terms. A study of the development of the tissues in selected groups of plants. Professor Stevens.

13.—Bacteriology. Five hours, 2d term, Monday, Tuesday, Wednesday, Thursday, and Friday, at 1:30 to 3:30. Bacteriological technique. Pathogenic bacteria and other forms of economic importance. Laboratory work ten hours a week, reading, and lectures. Professor Barber.

14.—Bacteriology for Domestic Science. Two hours, 2d term, Tuesday and Thursday, 3:30 to 5:30. To include a treatment of the more important bacteria of food and water and the prevention of the spread of infectious diseases. Professor Barber.

15.—Domesticated Plants. Two hours, 1st term, Tuesday and Thursday, 3:30 to 4:30. The origin and amelioration of cultivated plants. Methods of propagation and culture of trees, shrubs, herbaceous perennials, and annuals. The planting of private and public grounds. Reading and lectures and demonstrations. Professor Stevens, Professor Barber, and lecturers on the various phases of the subject.

COURSES FOR GRADUATES ONLY.

16.—Structure and Development of Cryptogams. By appointment, throughout the year. Bacteria or any group may be made a special study. Professor Barber.

17.—Morphology and Physiology of the Plant Cell. By appointment, 1st or 2d term, or both terms. A study of cell forms, their adaptation to specific functions, and their behavior under varying environment; nuclear and cell division; reproduction. Professor Stevens.

18.—Plant Ecology. By appointment, throughout the year. The relation of plants to their environment. Field-work and reading. Warming's and Schimper's texts and current literature. Professor Stevens.

19.—Botanical Seminary. One hour, by appointment. Review and discussion of current botanical work. Reports on assigned subjects. Open to graduates and advanced undergraduates.

## CHEMISTRY.

Professor BAILEY.
Associate Professor BARTOW.
Assistant Professor CADY.
Assistant Professor MCFARLAND.
Assistant Professor CURTIS.
Mr. MILLER.
Mr. FARAGHER.
Mr. CRAWFORD, Fellow.

### EQUIPMENT.

The Chemistry Building, which was completed in 1900, affords abundant laboratory space for carrying on the work. The rooms are furnished with gas, water, vacuum for rapid filtering, distilled water, and compressed air. The balance-rooms on each floor, store-rooms and instructors' rooms, conveniently located, afford every facility for scientific research. The laboratory for general chemistry accommodates 140 students working at one time, or 280 in two divisions; the qualitative laboratory has a sufficient number of desks for 72 students working at the same time, or 144 in two divisions; the quantitative laboratory accommodates 80 students, and the organic laboratory 72 students working at one time, or 144 in two divisions. The large lecture-room will seat over 300. In addition to these rooms, there are numerous smaller laboratories and classrooms that will each accommodate from ten to fifty students. Each student is assigned a desk and is loaned apparatus for his individual use. Hoods to carry off injurious gases are placed between all the windows in the large laboratories, and, with a constant pressure of air produced by a fan blower, abundant ventilation is secured. A liquid-air plant of unusual efficiency has been installed, which affords excellent facilities for making researches at extremely low temperatures. The assay laboratory, located in the basement, is provided with the usual muffle and crucible furnaces, and well stocked with ores for experimental use.

For illustration and demonstration in lectures there are supplied projection lanterns, cylinders of compressed gases, a liquid-air machine, apparatus for testing coal-oil, gas, alcohol; standard sets of thermometers and hydrometers, combustion furnaces, analytical balances; mineral collections; 800 specimens for illustrating organic chemistry; a mineral-water collection; sets of specimens for illustrating the manufacture of china, leather, zinc, glass, fats, soap, sugar, alcoholic liquors, gunpowder, fertilizers, white lead, acids, oils, cements, etc. In addition to these, the apparatus for use in physical chemistry has been recently increased by the purchase of several hundred dollars' worth of electrical instruments and apparatus for

thermochemistry, for the determination of molar weights, and for the measurement of the critical constants of liquids, so that the department is very fairly equipped for work in this line.

ADVICE AS TO CHOICE OF COURSES.

In the selection of courses to be pursued in chemistry, it is suggested that those who desire to study for medicine select courses 1, 2, 3, 5, 7, 9, 12; for teaching, courses 1, 2, 3, 4, 7, 12, 16, 18; for commercial chemistry, courses 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 15, 16; for mining and metallurgy, courses 1, 2, 3, 7, 8, 11, 15, 16; for business or general culture, courses 1, 2, 3, 4, 5, 12.

Those who desire to take graduate work should first make up undergraduate work to the point where they can do the advanced work satisfactorily.

COURSES FOR UNDERGRADUATES ONLY.

1. Elementary Chemistry I. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15; laboratory work Monday, 10:15 to 12:15, or 3:30 to 5:30. A study of the chemical elements and their compounds. Experimental lectures, recitations, and laboratory work. Open to all students in the College. Professor Bailey and Assistant Professor Curtis.

2. Elementary Chemistry II. Two hours, 2d term, Tuesday and Thursday, at 11:15; laboratory work Thursday, 10:15 to 12:15, or 3:30 to 5:30. A continuation of course 1. Open to all students of the College who have completed course 1. Professor Bailey and Assistant Professor Curtis.

3. Advanced Inorganic Chemistry. Five hours, daily, 1st term, 8 to 10. Lectures, recitations, and laboratory work. Ostwald's Principles of Inorganic Chemistry, translated by Alexander Findlay. Open to all students of the College who have taken courses 1 and 2. Assistant Professor Cady and Mr. Faragher.

4. Qualitative Analysis. Five hours, daily, 2d term, 8 to 10. Lectures and laboratory work. Bailey and Cady's Guide to the Study of Qualitative Analysis. Open to all students of the College who have taken course 3. Assistant Professor Cady and Mr. Faragher.

5. Technical Chemistry. Three hours, 1st term, Monday, Wednesday, and Friday, at 8. This course includes a technical study of the manufacture of acids, alkalies, explosives, glass, pottery, porcelain, mortars, cements, paper, alcohol, vinegar, leather; also of dyeing, calico printing, and similar industries. Lectures and recitations. Open to Juniors and Seniors who have taken courses 1 and 2. Professor Bailey.

6. The Chemistry and Physiology of Foods. Two hours, 1st term, Tuesday and Thursday, 10:15 to 12:15; and three hours, 2d term, Monday, Wednesday, and Friday, 1:30 to 3:30. A practical study of air and water; also, food-supply, its source, composition, liability to falsification and deterioration; preparation and methods of preservation. This will include also a study of dietetics from a chemical standpoint, balanced rations, economy of foods, and the digestive processes. In the latter topic will be included lectures on the digestive ferments, by Professor Sayre. Lectures and laboratory work. Open to Juniors and Seniors who have taken courses 1 and 2. Professor Bailey and Professor Sayre.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

7.—Quantitative Analysis. Five hours, 1st term, daily, 3:30 to 5:30; or 2d term, daily, 8 to 10. Lectures and laboratory work. Newth's Quantitative Analysis. Must be preceded by course 3. Professor Bailey and Mr. Curtis, 1st term; Associate Professor Bartow and Mr. Curtis, 2d term.

8.—Quantitative Analysis. Advanced course. Five hours, 1st term, daily, at 3:30 to 5:30; or 2d term, daily, 8 to 10. Must be preceded by course 7. Either of the subjects mentioned below may be taken: (*a*) Chemistry of the cement industry. (*b*) Chemistry of the packing-house industries. (*c*) Iron analysis. (*d*) Electrolytic estimation of metals. (*e*) Gas and oil analysis. (The latter should be preceded by course 12.) Professor Bailey, 1st term; Associate Professor Bartow, 2d term.

9.—Water Analysis. Three hours, 2d term, Monday, Wednesday, and Friday, 8 to 10. A study of the mineral and sanitary analyses of waters. Mason's Water Analysis, and volume VII (Mineral Waters) University Geological Survey of Kansas. A laboratory course. Must be preceded by course 7. Associate Professor Bartow and assistant.

10.—Sugar Analysis. A laboratory course. Must be preceded by course 7.

11.—Assaying and Metallurgical Analysis. Five hours, 2d term, daily, 8 to 10. This is a course in the fire assay of the ores of gold, silver, and lead, followed by the volumetric analysis of the ores of copper, iron, zinc, manganese, etc., and the analysis of bullion. Lectures and laboratory work. Furman's Manual of Practical Assaying. Must be preceded by course 7 and mineralogy 1. Assistant Professor McFarland.

12.—Organic Chemistry. Five hours, 2d term, daily, 3:30 to 5:30. A study of the hydrocarbons and their derivatives. Lectures,

recitations, and laboratory work. Must be preceded by courses 1 and 2. Associate Professor Bartow and Mr. Miller.

12*a*.—Organic Chemistry. Two hours, 2d term, Tuesday and Thursday, 3:30 to 5:30. A lecture and recitation course. This is designed for those students who do not care to take so complete a course as 12. It will include lectures and recitations without laboratory work. Must be preceded by course 1. Associate Professor Bartow and Mr. Miller.

13.—Organic Preparations. Five hours, 1st term, daily, 10:15 to 12:15. A special study of organic synthetical methods. Lectures and laboratory work. Practical Methods of Organic Chemistry, Gattermann, translated by Shober. Must be preceded by course 12. Associate Professor Bartow.

14.—Organic Preparations, Advanced. Five hours, either term, by appointment. A continuation of the work of the previous course, with ultimate organic analysis for carbon, hydrogen, nitrogen, sulphur, and the halogens. Must be preceded by course 13. Associate Professor Bartow.

15.—Metallurgy I. Five hours, 1st term, daily, at 11:15. Metallurgy of lead, zinc and copper (1st half-term), followed by metallurgy of silver, gold, mercury, and tin. Study of principal ores and methods of extraction and refining, amalgamation, chlorination and cyanide processes, pyritic smelting, etc. Must be preceded by chemistry 3. Required of mining engineers, Senior; optional in the College and for chemical engineers, Senior. Assistant Professor McFarland.

16.—Metallurgy II. Five hours, 2d term, daily, at 10:15. General metallurgy and metallurgy of iron and steel. Properties of metals and alloys, metallurgical terms and processes, furnace types, refractory materials and slags, fuels and thermal measurements, calculation of furnace charges, etc., followed by a study of iron and its ores; methods for manufacture of pig-iron and wrought iron; manufacture of steel by crucible, Bessemer and open-hearth processes, special steels and special processes; heat treatment and metallography of steel. Must be preceded by chemistry 3. Required of mechanical and chemical engineers, Senior; optional in the College and for mining engineers, Senior. Assistant Professor McFarland.

17.—Physical Chemistry. Five hours, 1st term, daily, at 10:15. A course paying special attention to electrochemistry. Lectures and laboratory work. Must be preceded by chemistry 7, or by chemistry 2, and physics 4 and 5, and mathematics 5. Assistant Professor Cady.

18.—Physical Chemistry. Five hours, 2d term, daily, at 10:15. A general course in theoretical and physical chemistry. Lectures and laboratory work. Must be preceded by chemistry 7 or chemistry 2 and physics 4 and 5 and by mathematics 5. Assistant Professor Cady.

19.—Electrochemistry. Five hours, 2d term, daily, by appointment. The study of reactions involving oxidation and reduction, electrosyntheses and decompositions, the preparation of chemicals, the reduction of metals from their ores, and the purification of metallurgical products. A laboratory course, with lectures on the theory and practice of electrochemistry. Must be preceded by course 17. Assistant Professor Cady.

COURSES FOR GRADUATES ONLY.

20.—Analytical Chemistry. Five hours, either term, by appointment. A research course. This may include the investigation of some problem in metallurgical or manufacturing processes, the complete investigation of some proposed water-supply, the development of new methods in analytical chemistry, or a study and comparison of methods already in use. Professor Bailey.

21.—Organic Chemistry. Five hours, either term, by appointment. A research course. This course offers a chance for a more extended study and original investigation to those who have proper preparation. Associate Professor Bartow.

22.—History of Chemistry. Three hours, 2d term, by appointment. A course in history of chemistry and the development of chemical theories. Recitations, library work, and the presentation of reports. Offered in 1904–'05 and alternate years thereafter. Professor Bailey.

23.—Physical Chemistry. Five hours, either term, by appointment. A research course extending over two or more terms. An opportunity is offered, to those who are sufficiently advanced to carry on investigations in this most recently developed branch of chemistry. Assistant Professor Cady.

## ECONOMICS.

(See Sociology.)

## DRAWING AND DESIGN.

Professor Griffith.

EQUIPMENT.

The studios of the department of drawing on the third floor of Snow Hall are well equipped with a great many casts from the antique; books and plates upon the theory and history of ornament;

a fine printing-press, designed for color-printing, and used by the students to duplicate their designs; easels and drawing-boards. The classical museum and the museum of natural history offer an abundance of material for the use of students in design.

ADVICE AS TO CHOICE OF COURSES.

The following courses are optional: Technical students, to whom some drawing is essential, are advised to take course 1. Students wishing training in artistic perception and graphic expression, for its general culture value, must take course 1, followed by 3 and 4.

COURSES FOR ADVANCED UNDERGRADUATES.

1.—FREE-HAND DRAWING. Three hours, 1st term, Monday, Wednesday, and Friday, 1:30 to 3:30. Drawing with pencil and charcoal from the cast and objects in still life, which aims to teach the student to construct form in a simple and correct manner; drawing with pen and ink and water colors for illustrative and reproductive processes. Professor Griffith.

2.—FREE-HAND DRAWING. Three hours, 2d term, Monday, Wednesday, and Friday, 1:30 to 3:30. A continuation of course 1. Professor Griffith.

3.—PRINCIPLES OF ART. Two hours, 1st term, Tuesday and Thursday, at 1:30. A lecture course on the theory of the technical beauties of a work of art, presenting the principles of composition and perspective, together with considerations of technical processes. The object of the course is to give the student a critical knowledge necessary to understand and more fully enjoy a work of art. Professor Griffith.

4.—ORNAMENTAL DESIGN. Two hours, 2d term, Tuesday and Thursday, 3:30 to 5:30. The anatomy of pattern and the planning of ornament. Must be preceded by course 1. Professor Griffith.

5.—ORNAMENTAL DESIGN. Two hours, 1st term, Tuesday and Thursday, 3:30 to 5:30. The application and history of ornament. Must be preceded by course 4. Professor Griffith.

## EDUCATION.

Professor OLIN.
Associate Professor JOHNSON.
Assistant Professor ———.
Mr. MITCHELL, Fellow.

EQUIPMENT.

The library facilities for the work of this department include about 1200 volumes under the title "Education," and a large number of volumes listed under other titles. Among these volumes are

complete sets of the Reports of the Commissioner of Education, Horace Mann's Reports, the International Education Series, the Great Educators Series, etc. There are files of the Pedagogical Seminary, the Educational Review, the School Review, and other high-class educational periodicals. The department has a museum room on the third floor of the Chemistry Building, in which are found several hundred volumes of school books, ancient and modern, pamphlets, and a limited number of samples of school furnishings and apparatus. Weekly sessions of the conference in education are held for the consideration of current literature and discussions of topics in education. These meetings are open to undergraduates, and attendance upon them is required of graduate students in education.

ADVICE AS TO CHOICE OF COURSES.

Courses 1, 2 and 3 are recommended for all students in education. In addition to these, for purposes of general culture, courses 8, 9 and 10 are recommended; the other courses offered are more for technical study and the practical application of educational principles, and, in general, their numbers indicate the order of their advancement. Students intending to qualify for the University teacher's diploma are recommended to begin their work in education in the Junior year.

COURSES FOR UNDERGRADUATES ONLY.

1.—History of Ancient and Mediæval Education. Three hours, 1st term, Monday, Wednesday, and Friday, at 3:30. A survey of typical movements in education, the development of systems, and the work of great educators. Professor Olin.

2.—History of Modern Education. Three hours, 2d term, Monday, Wednesday, and Friday, at 3:30. This is a continuation of course 1, but may be taken separately. It deals with the period from the revival of learning to the present time. Professor Olin.

4.—School Law and Administration. Two hours, 1st term, Tuesday and Thursday, at 2:30. A study of the Kansas laws relating to the maintenance, supervision and administration of schools. Comparison with school laws of other states. Individual studies of special state schools of Kansas and city systems of other states. Professor Olin.

5.—School Economy. Two and one-half hours, 1st half of 2d term, daily, at 2:30. Conditions and principles essential to efficient school work, school hygiene, organization and authorities of the school, financial support, courses of study, government, library management. Required reading, observation work, class discussions, and lectures. Open to Juniors and Seniors who have taken courses 3 and 1 or 2. Professor Olin.

6.—Methods of Instruction. Two and one-half hours, 2d half of 2d term, daily, at 2:30. Rational basis of the teaching process. Examination of the cardinal Herbartian doctrines. Illustrations from typical elementary school subjects. Observation in elementary and secondary schools. Open to Juniors and Seniors who have taken courses 3 and 1 or 2. Assistant Professor ———.

7.—School Supervision. Two hours, 1st term, Tuesday and Thursday, at 9. This course is largely based on the texts of Payne and Pickard, and the reports of the Committees of Twelve and Fifteen. Reports, class discussions, and lectures. Professor Olin.

13.—The Secondary School. Two and one-half hours, 2d half of 2d term, daily, at 9. A study of the development, equipment, curriculum and administration of the American high school. Associate Professor Johnson.

COURSES FOR GRADUATES AND ADVANCED UNDERGRADUATES.

3.—Philosophy of Education. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. Library work, based mainly on Rosenkranz, Compayré, and Horne. Required reading, reviews, and special studies. Assistant Professor ———.

8.—Comparative Study of Educational Systems. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. A study of the elements of the school systems of England, France, and Germany, and a comparison with the systems of this country. Professor Olin.

9.—Educational Classics. Two hours, 1st term, Tuesday and Thursday, at 3:30. A critical study of the educational doctrines found in Plato's Republic, Quintilian's Institutes of Oratory, and Locke's Thoughts Concerning Education. This course should be preceded by course 1. Professor Olin.

10.—Educational Classics. Two hours, 2d term, Tuesday and Thursday, at 3:30. This is a continuation of course 9, but may be taken separately. It involves a critical study of the educational doctrines found in Rousseau's Emile, Herbart's Science of Education, and Herbert Spencer's Education. Professor Olin.

12.—Seminary. Five hours, 2d term, daily, hours by appointment. Individual investigation of special subjects in educational philosophy, institutions, and administration. Open to students who have done previously at least eight hours' work in the department. Professor Olin.

COURSE FOR GRADUATES ONLY.

11.—Problems of Organization, Management and Method in Educational Systems. Five hours, 2d term, daily, hours by appointment. Library work, reports, discussions, and lectures. Not open to students who have taken courses 5 and 6. Professor Olin.

## ENGLISH LANGUAGE AND RHETORIC.

Professor HOPKINS.
Professor DUNLAP.
Associate Professor O'LEARY.
Assistant Professor RAYMOND.
Assistant Professor LYNN.
Assistant Professor BRYANT.
Assistant Professor SISSON.
Miss GARDNER.
Mr. BARRETT, Fellow.

### EQUIPMENT.

Apart from a number of portraits and historical maps, the equipment of this department is the University library, in which are collections of volumes and periodicals relating especially to rhetoric and composition, to English style and English literary criticism, to journalism and newspaper work in general, and to English philology. Among these are an especially fine collection of important dictionaries, and complete sets of journals, such as Anglia and Englische Studien, and of such publications as those of the Chaucer Society, the Early English Text Society, and the English and the American Dialect Societies. The number of volumes pertaining more directly to the subjects of this department and not included in the total for English literature is about 1000; and the total for all departments of English is about 5000. A large reading-room is reserved for the use of students in these departments, under the charge of a special librarian.

### ADVICE AS TO THE CHOICE OF COURSES.

Every student should confer with an instructor with reference to the general arrangement of his studies as early in his course as he can, and should take especial notice of the fact that certain elementary and fundamental courses scheduled for Freshman and Sophomore years, or their equivalent, must be completed before he can be admitted to any other English courses whatever. These introductory courses are rhetoric 1 and 2 and English literature 1, 2, and 3.

Few undergraduate students are justified in confining their attention to any single department of English study; but any student may properly shape his work with reference to future occupation or profession. Major work in English composition may be advisable for those contemplating a journalistic or literary career, to include a selection from such courses as rhetoric 3, 4, 5, 6, 7, 8, 17, 18, 19, 20, 21, and 22. Major work in English language may sometimes be desirable for intending teachers who wish to make especially thorough preparation for their work, to include a selection from such courses

as 9, 10, 11, 12, 15 and 16; and no intending teacher should fail to take at least one elementary course in English language, such as 9, 10, 11, or 24. At the same time, either class of students should give all possible attention to English literature also; the first class electing the subjects which bear most directly upon their special interests; and the second class endeavoring to come into touch with subjects unlike in character and method, and presented by different instructors, in order to make the range of their experience as wide as possible. Conversely, every student of English literature should give part of his time to courses in English language, many of which, such as 9, 10, 13, 14, 15, and 16, are in character literary as well as linguistic.

In the following list, courses 1–8, 17–21 and 25 belong to the rhetorical group; courses 9–16 and 24 to the linguistic. Of these courses, 1, 2, 3, 4, 5 and 6 are fundamental, as explained below; courses 7 and 8 are intended especially for journalists, and are required in the general course in journalism outlined in this catalogue. Courses 17–22 are for those interested in advanced English composition and in literary work; courses 23–25 are special courses for teachers; and courses 9–16 for advanced students, whether interested in teaching, language, or literature. The proper relation and succession of these courses are shown in the descriptions following. Courses which are continuations of preceding courses cannot be taken by students who have not had the preceding course or its equivalent, unless it is so stated.

COURSES FOR UNDERGRADUATES ONLY.

1.—Rhetoric and English Composition. Two hours, 1st term, Tuesday and Thursday, at 8, 9, 10:15, 4:30, and at other hours to be arranged. Outlines of rhetoric, with oral and written exercises and themes. Required of all Freshmen in the College. Miss Gardner and Assistant Professors Raymond and Lynn.

2.—Rhetoric and English Composition. Three hours, 2d term, Monday, Wednesday, and Friday, at 8, 9, 10: 15, and 2:30, and at other hours to be arranged. A continuation of course 1. Required of all Freshmen in the College. Miss Gardner and Assistant Professors Raymond and Lynn.

3.—Narration and Description. Three hours, 1st term, Monday, Wednesday, and Friday, at 8. A study of general principles, with exercises. A fundamental course, leading to 7 and 8, or to the group 17–22, inclusive. Associate Professor O'Leary.

4.—Narration and Description. Two hours, 2d term, Tuesday and Thursday, at 8. A continuation of course 3. Associate Professor O'Leary.

5.—Exposition and Argument. Two hours, 1st term, Tuesday and Thursday, at 9. A study of general principles, with exercises and briefs. A fundamental course, leading to 7 and 8, to 17–22, inclusive, or to courses in public speaking and debate. Assistant Professor Sisson.

6.—Exposition and Argument. Three hours, 2d term, Monday, Wednesday, and Friday, at 8. A continuation of course 5, but open also to students who have not had course 5. Assistant Professor Sisson.

7.—Newspaper Writing. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. A survey of all departments of newspaper work, with practice in reporting, in editorial and feature writing, and in proof-reading, in connection with local and other newspapers. One or more of the subjects named may be chosen for special attention. Must be preceded by courses 3 and 4, 3 and 5, or 5 and 6, and by one or more courses in English literature, in addition to 1, 2, and 3. Professor Hopkins.

8.—Newspaper Writing. Two hours, 2d term, Tuesday and Thursday, at 11:15. A continuation of course 7, with assignment to newspaper duty and the special study of some department of newspaper making, with thesis. Conference course. Professor Hopkins.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

9.—Elementary Old English (Anglo-Saxon). Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. Introductory course in Old English grammar, with reading of West Saxon texts, chiefly prose. Should be preceded by courses 1 and 2 in German or their equivalent. Required for admission to all advanced courses in English language, except as otherwise specified. Professor Hopkins

10.—Beówulf. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. Must be preceded by course 9. Professor Hopkins.

11.—History of the English Language. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. Elements of English philology, including sources and development of the language, its pronunciation, inflections, and syntax. May with advantage be preceded by course 9. Assistant Professor Bryant. (Not given in 1905–'06.)

12.—General Introduction to Phonetics. Two hours, 2d term, Tuesday and Thursday, at 11:15. Open to advanced students of any language. Assistant Professor Bryant. (Not given in 1905–'06.)

13.—Transition English. Two hours, 1st term, Tuesday and Thursday, at 10:15. Language and literature of the fifteenth century; study of selected texts, with required thesis. Open to students who have not had elementary Old English. Professor Hopkins.

14.—Middle English. Two hours, 2d term, Tuesday, and Thursday, at 9. Language and literature of the fourteenth century, exclusive of Chaucer. Open to students who have not had Old English. Professor Dunlap.

15.—The Cædmonian Poems I. One hour, 1st term, Thursday, at 10:15. Must be preceded by course 9. Professor Dunlap.

16.—The Cædmonian Poems II. One hour, 2d term, Thursday, at 10:15. A continuation of course 15. Professor Dunlap.

17.—Literary Criticism. Two hours, 1st term, Tuesday and Thursday, at 9. Study of the principles and methods of criticism through its history and literature, with practice in book reviewing and critical writing. Professor Hopkins.

18.—Literary Criticism. Two hours, 2d term, Tuesday and Thursday, at 9. A continuation of course 17, with special attention to the growth of criticism in England and America. Library and conference course, with required thesis. Professor Hopkins.

19.—Versification. One hour, 1st term, Tuesday, at 11:15. Study of the forms and principles of English verse. Professor Hopkins.

20.—Versification. One hour, 2d term, Wednesday, at 11:15. A continuation of course 19. Professor Hopkins.

21.—Thesis and Forensic Writing. One hour, 2d term, Tuesday, at 8. Practice in gathering and handling material; investigating and testing. Assistant Professor Sisson.

22.—Prose Invention. Two hours, 2d term, Tuesday and Thursday, at 10:15. General survey of theories of literary art, with practice in original production. Library and conference course, with required thesis. Professor Hopkins.

23.—Methods of Teaching English. Three hours, 2d term, Monday, Wednesday, and Friday, at 3:30. Principles of teaching English composition, English literature, and English language. Lectures, library reading, illustrative and review work. Must be preceded by 3 and 4, 3 and 5, 3 and 6, or 5 and 6, and by at least one three-hour course in English literature, in addition to 1, 2, and 3. Additional credit up to five hours may be allowed when practice teaching is done; only a small amount of such teaching, however, can usually be provided. Associate Professsor O'Leary.

24.—Old and Middle English Grammar. Two hours, 2d term, Tuesday and Thursday, at 3:30. An elementary course, designed to accompany 23, for intending teachers who have not taken courses 9 or 11. Offers a rapid-reading survey of the earlier forms of the English language. Some representative texts are read. Especial attention is given to the relations between early and modern grammatical forms. Associate Professor O'Leary.

25.—History of the Literature and the Teaching of Rhetoric in English. One hour, 2d term, Friday, at 2:30. Lectures, library reading, and the preparation of a thesis. Associate Professor O'Leary.

## ENGLISH LITERATURE.

Professor Dunlap.
Professor Hopkins.
Associate Professor Lawrence.
Associate Professor O'Leary.
Assistant Professor Raymond.
Assistant Professor Lynn.
Assistant Professor Bryant.*

### EQUIPMENT.

The department of English literature is well supplied with maps and with a large number of portraits. The library has 3878 volumes upon English literature. There are 624 volumes in the Shakspere alcove. The department also possesses the Chaucer Society publications, the Spenser Society, the Shakspere Society, the New Shakspere Society, the Shakspere Jahrbuch, *facsimiles* of the quartos, *facsimiles* of the first folio, the Shelley Society, and the Browning Society. The seminary room is large and commodious, and is well adapted for study and investigation.

### ADVICE AS TO CHOICE OF COURSES.

The courses in English literature are designed to meet the needs of various classes of students. There are courses for the general student, for the student of literary history, for the student of journalism, for the student who intends to do graduate work in English literature, and for the student who intends to teach English literature. The instructors invite conference with students, and will assist in planning work to meet special cases.

### COURSES FOR UNDERGRADUATES ONLY.

1. English Literature. Three hours, 1st term, Monday, Wednesday, and Friday, at 8, 9, 10:15, and 4:30. General history, supplemented with class study of representative authors and with required

* Absent on leave, 1905–'06.

library reading. Text-books, Simond's English Literature and Pancoast's Standard English Poems. Open to all students of the College. Associate Professor Lawrence and Assistant Professor Lynn.

2. English Literature. Two hours, 2d term, Tuesday and Thursday, at 8, 9, 10:15, and 4:30. A continuation of course 1. Associate Professor Lawrence.

3. English Literature of the Eighteenth Century. Three hours. Given both terms. Monday, Wednesday, and Friday, 1st term, at 2:30; 2d term, at 11:15. A study of the period 1660–1780. Gosse's History of Eighteenth Century Literature will be used as a text-book, supplemented by lectures, by use of Pancoast's Standard English Poems in the classroom, and by considerable library reading. The preparation of a thesis is required, with reports on collateral library work. Open to all students of the College who have had courses 1 and 2. Associate Professor Lawrence and Assistant Professor Lynn.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

4.—American Literature. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. General history, with especial reference to the beginnings and to the work of the best-known writers. Lecture and library course, with class study of representative selections. Professor Hopkins.

5.—American Literature. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. Study of later writers and of current literature. Lecture and conference course, with required readings and reports. Professor Hopkins.

6.—Chaucer. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. Lectures upon Middle English grammar, and upon the life and times of Chaucer. Neither Anglo-Saxon nor Middle English required for entrance. Careful reading of the Prologue, Knightes Tale, and the Nonne Preestes Tale. Rapid reading of a large part of the Canterbury Tales. Preparation of two theses. Professor Dunlap.

7.—English Literature of the Elizabethan Period, with special reference to Spenser. Two hours, 1st term, Tuesday and Thursday, at 9. Preparation of two theses. Professor Dunlap.

8.—Shakspere. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. Lectures upon the life and times of Shakspere. Study and interpretation of three plays, with special attention to literary form, plot construction, character study, and Elizabethan grammar. Two hours of library work required daily and preparation of two theses. Professor Dunlap.

9. Shakspere. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. Lectures upon the life and times of Shakspere. Study and interpretation of three plays, with special attention to literary form, plot construction, character study, and Elizabethan grammar. Two hours of library work required daily and preparation of two theses. Professor Dunlap.

10.—English Literature of the Seventeenth Century, from Donne to Dryden. Two hours, 1st term, Tuesday and Thursday, at 10:15. Historical and critical study of the works of Herrick, Herbert, Milton, Cowley, Waller, Burton, Taylor, Clarendon, and Bunyan. Two hours daily of library work, with two theses during the term. Assistant Professor Raymond.

11.—English Literature of the Seventeenth Century, from Donne to Dryden. Two hours, 2d term, Tuesday and Thursday, at 10:15. Continuation of course 10. Assistant Professor Raymond.

12.—The Growth of Periodicals. Three hours, 2d term, Monday, Wednesday, and Friday, at 2:30. A study of the rise of popular opinion as a factor in literature, and the development of democratic ideals. Lectures on the history of literary traditions in the periodicals, and critical study of the individual authors with reference to these traditions. Open to Juniors and Seniors who have had English literature 1, 2, and 3, and either 9, 10, 11, 12, 13, or 14 and 15. Preparation of two theses required. Assistant Professor Raymond.

13.—English Literature of the Eighteenth Century. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. Prose. The authors studied will be Swift, Addison, Goldsmith, and Burke. Lectures, library work, and the preparation of theses. Associate Professor O'Leary.

14.—The English Essay. Two hours, 2d term, Tuesday and Thursday, at 1:30. A study, historical and critical, of the essay as a literary form, from Bacon to the present time. Lectures, theses, and library work. Associate Professor O'Leary.

15.—English Literature of the Nineteenth Century. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Prose, exclusive of the novel. Biographical and critical lectures. The essay. Criticism. History. The authors studied are Lamb, Hazlitt, De Quincey, Landor, Newman, Arnold, Carlyle, Macaulay, Ruskin, Pater, and Stevenson. Two hours of library work daily and preparation of two theses. Professor Dunlap.

16.—English Literature of the Nineteenth Century. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. Poetry.

Biographical and critical lectures. The authors studied are Wordsworth, Coleridge, Southey, Shelley, Keats, Byron, Arnold, Tennyson, and Browning. Two hours of library work daily and preparation of two theses. Professor Dunlap.

17.—Victorian Literature, exclusive of the novel and Tennyson and Browning. Two hours, 1st term, Tuesday and Thursday, at 11:15. Professor Dunlap.

18.—English Lyrical Poetry, from Skelton to the present day. Two hours, 2d term, Tuesday and Thursday, at 11:15. Professor Dunlap.

19.—The English Novel. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. An historical and critical survey of the English novel, from Defoe to Meredith. Lectures on the growth and development of the novel. Study of selected typical novels, illustrative of important phases of fiction. Two hours of library work daily and preparation of two theses. Professor Dunlap.

20.—Browning. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. Lectures upon the life and literary period of Browning, with general view of more important works. Interpretative study of shorter poems and two or three of the plays. Two theses required. Assistant Professor Lynn.

21.—Tennyson. Two hours, 1st term, Tuesday and Thursday, at 10:15. General view of Tennyson and his relation to his period. Detailed study of representative works. One thesis required. Assistant Professor Lynn.

22.—Ballad, Epic, and Romance. Three hours, 1st term, Monday, Wednesday, and Friday, at 3:30. General introduction to mediæval poetry, with particular reference to the origins and differentiating characteristics of the various types. A large amount of library work is required, with the preparation of a thesis. Much modern poetry showing the influence of mediæval literature will be read, and especial attention will be given to tracing the development of the Arthurian romances, the Nibelungen story, the song of Roland, the legends of the Holy Grail, and similar material. Associate Professor Lawrence.

23.—History of the English Drama. Three hours, 2d term, Monday, Wednesday, and Friday, at 2:30. This course includes the period from the liturgical plays to the closing of the theaters in 1642, omitting Shakspere. Reading of two or three plays is required each week, with the preparation of a thesis, to be submitted at the end of the term. Associate Professor Lawrence.

## ENGINEERING—CIVIL.

Professor MARVIN.
Assistant Professor HOAD.
Assistant Professor TAYLOR.

For equipment, see under School of Engineering.

Courses 8 to 15, inclusive, are open to Juniors and Seniors in the College. Courses 11 to 16, inclusive, are open to candidates for the master's degree, when accompanied by such extra work as may be required by the instructor. Courses 16 to 20, inclusive, are open only to candidates for the master's degree.

### COURSES FOR UNDERGRADUATES.

5.—SURVEYING. Five hours, 2d term, daily, at 11:15. Engineer's instruments, their construction and adjustment. Methods of making and platting land, topographic, mining and hydrographic surveys. Sources of error and the means of controlling the precision of field-work. Leveling and earthwork. Open to all students of the College who have had plane trigonometry. Assistant Professor Hubbard.

8.—MASONRY. Five hours, 2d half of 1st term. Character of materials composing masonry. Methods of cutting and dressing stone. Foundations: Cribwork, coffer-dams, caissons, piles and pile-driving, concrete, pneumatic processes, etc. Masonry structures: Culverts, arches, piers, abutments, bridges, etc.; their form, construction, strength, and cost. Compound arches of concrete and metal. Recitations and lectures. Assistant Professor Hubbard.

9.—ROADS AND PAVEMENTS. Two hours, 2d term, Tuesday and Thursday, at 9. A study of the materials for and methods used in the construction and improvement of country roads and city pavements. Earthwork, drainage, the road foundation, the wearing surface, etc. Principles governing the location of roads. The economic importance of the "good-roads movement." Assistant Professor Hoad.

10.—RAILWAY LOCATION. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. The principles involved in an economic location and construction of railways. Analysis of traffic and operating expenses. The influence of proposed changes in location upon the amount of total revenue from traffic, the bonded debt and the corresponding fixed charges for interest, the operating expense, and the dividend-paying capacity of the road. Methods of conducting field-work for preliminary and location surveys. Assistant Professor Hoad.

11.—RAILWAY SURVEYING. Five hours, 1st term, daily, at 10:15.

A study of the methods of laying out and constructing railways. The setting out of simple and compound curves and calculation of excavation and embankment. Yards, turnouts, and switches. Easement curves of various types. Calculation of waterways, and methods of staking out foundations for culverts and bridges. This course must be preceded by a general course in surveying. Field-practice one-half day per week. Assistant Professor Hoad.

12.—Sanitary Engineering. Five hours, 1st half of 1st term, daily, at 11:15. The collection, removal and disposal of sewage by various methods. Water-carriage and pneumatic systems. Separate and combined systems. The construction of sewers, outfalls, manholes, and flushing appliances. Ventilation of sewers. Treatment of sewage. The collection and disposal of garbage and other refuse. Garbage destruction and utilization. Street-cleaning. Assistant Professor Hoad.

13.—Sanitary Engineering. Five hours, 2d half of 2d term, daily, at 11:15. Water-supply. The requisites of a supply as to quality and quantity. The value of chemical and biological analyses and the interpretation of results. Relation of water-supply to the public health. Rainfall and the gathering and storage of surface-water. The collection of ground-water. The use of rivers and lakes as sources of supply. Distributing systems; conduits and pipe-lines, pumping machinery, the flow of water in open channels and closed conduits. The construction of dams and reservoirs. The purification of water. Methods of maintaining the efficiency of existing plants. Assistant Professor Hoad.

14.—Roofs and Bridges. 1st term, five hours, daily, 1:30 to 3:30. Analytical and graphical calculation of stresses in framed structures under various forms of loading. This course must be preceded by course 2 in mechanics. Professor Marvin.

15.—Bridge Designing. Five hours, 2d term, daily, 1:30 to 3:30. A study of bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course 14. Professor Marvin.

COURSES FOR GRADUATES ONLY.

16.—Structural Designing. Ten hours, 1st or 2d term, daily. An advanced course covering cantilever, swing and suspension bridges, skeleton frames for buildings, train-shed roofs, stand-pipes, and elevated tanks. This course is designed to follow course 15. Lectures, recitations, and detail designing in the drawing-room. Professor Marvin.

17.—Engineering Materials. Five hours, 1st term, daily. An

advanced course, which must be preceded by course 2 in mechanics. It covers the methods of manufacture of structural materials and the different means and machines used in testing their qualities. The materials considered are cast iron, wrought iron, steel, brick, stone, cements, concrete, and timber. Opportunity will be given for specialization along some particular line, if desired, and considerable experimental work may be done in the testing laboratory. Recitations, lectures, library and laboratory work. Professor Marvin.

18.—Sanitary Engineering. Five hours, 2d term, daily. An advanced course, to follow courses 12 and 13. The public health. Contagious diseases and methods for destroying them. Bacteriological methods as applied to sanitary work. Influence of sanitary works on public health. Advanced work on sewerage and water-supply. Lectures, recitations, and reading. Assistant Professor Hoad.

19.—Geodesy. Five hours, 2d term, daily. Method of making geodetic surveys. Station signals and their location. The measurement of angles and laying out of base lines. Determination of latitude, longitude, time, and azimuth. Instrumental constants and sources of error. Leveling by vertical angles. Precise leveling. Figure of the earth. A knowledge of surveying and calculus is necessary for this course. Professor Marvin.

## ENGINEERING—Mechanics.

Professor Marvin.
Assistant Professor Hood.
Assistant Professor Hubbard.
Assistant Professor Corp.

For equipment, see under School of Engineering.

Courses 1 to 5 are open to Juniors and Seniors. When accompanied by such extra work as may be required by the instructor, they are also open to candidates for the master's degree.

1.—Mechanics. Five hours, 1st term, daily, at 9. A study of the laws of statics and dynamics. Action of forces upon bodies and the resulting motions. Professor Marvin.

2.—Strength of Materials. Four hours, 2d term, daily, at 10:15. The theory of resistance to stress and applications to engineering construction. Professor Marvin.

3.—Testing of Materials. Four hours, 2d term, Tuesday, Thursday, or Saturday. A laboratory course to accompany course 2. The testing of iron, steel, wood and other materials of construction for resistance to tension, compression, torsion, bending, and

shearing. Experimental determination of the limits of safe loading. The testing of paving brick. Assistant Professor Hood and Assistant Professor Corp.

4.—Hydraulics. Four hours, 1st half of 1st term, at 10:15. A study of the laws governing the pressure and flow of liquids and gases and the force of and resistance to their motion. Assistant Professor Hubbard.

5.—Hydraulic Laboratory. Two hours, 1st term, Tuesday, Thursday, or Friday. A course to accompany course 4 and the course in hydraulic machinery. Experimental work with the flow of water over weirs, through orifices and pipes, and in testing hydraulic machinery. Assistant Professor Hood.

## ENGINEERING—Electrical.

Professor Blake.
Assistant Professor Rice.

For equipment, see under School of Engineering.

Courses 1, 2 and 3 are open to Juniors and Seniors who have had the necessary preparation.

COURSES FOR UNDERGRADUATES ONLY.

1.—Theory of Electricity and Magnetism. Five hours, 1st term, daily, at 10:15. A mathematical treatment of the general principles involved in the direct-current devices and introductory to their application in direct-current machinery. Junior. Professor Blake.

2.—Theory of Alternating Currents. Five hours, 2d term, daily, at 9. A mathematical treatment of the general principles involved in alternate-current phenomena and introductory to their application in polyphasal machinery. Junior. Professor Blake.

3.—Dynamo Machinery. Five hours, 1st term, daily, at 11:15. A briefer course than 3 and 4 (School of Engineering), covering both direct- and alternating-current machines. Must be preceded by physics 7 and 8 and calculus. Junior. (Course 3 is course 14 in School of Engineering.) Assistant Professor Rice.

## ENGINEERING—Mechanical.

Associate Professor Hess.
Assistant Professor Corp.

For equipment, see under School of Engineering.

Courses 10 and 11 are open to Juniors and Seniors in the College. Courses 2 to 11, inclusive, are open to graduate students who are prepared for them.

2.—High-speed Steam-engine. Three hours, 2d term, Monday and Wednesday, 1:30 to 4:30. Junior. Text, Klein's High-speed Steam-engine. Associate Professor Hess.

3.—Kinematics. Three hours, 1st term, Monday, Wednesday, and Friday, 8 to 10:15. Senior. Text, Barr's Kinematics of Machinery. Associate Professor Hess.

4.—Machine Design. Four hours, 1st term, Monday and Wednesday, 1:30 to 5:30. Senior. The design of and making of working-drawings for some typical machine. Associate Professor Hess.

5.—Machine Design. Four hours, 2d term, Tuesday and Thursday, 1:30 to 5:30. Continuation of course 4. Associate Professor Hess.

8.—Mechanics of Machinery. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Junior. Machinery of transmission. Text, Jones's Machine Design, vol. II. Assistant Professor Corp.

9.—Mechanics of Machinery. Three hours, 2d term, Monday, Wednesday, and Friday, at 8. Senior. Air-compressors, gas-engines, refrigerating machines, and steam turbines. Associate Professor Hess.

10.—Hydraulic Machinery. Two hours, 2d half of 1st term, at 10:15. Study of hydraulic engines, water-wheels, turbines and impulse wheels, pumps and rams, elevator machinery, and special applications of hydraulic power. Must be preceded by mechanics 4. Text, Barr's Pumping Machinery. Associate Professor Hess.

11.—Thermodynamics. Four hours, 1st term, at 11:15. Study of the relations of heat phenomena. Theory of gases and vapors. Theory of heat engines and discussion of heat efficiencies. Must be preceded by physics 1, 2, 3, 4, and calculus. Lectures, recitations, and problems. Texts, Reeves's Thermodynamics and Spangler's Notes on Thermodynamics. Associate Professor Hess.

## ENTOMOLOGY.

Associate Professor Hunter.

### EQUIPMENT.

The two laboratories are arranged so that one is devoted to the introductory courses and the other to the research courses. The former is equipped with both compound and dissecting microscopes, and such accessory apparatus as is required by the students. The latter contains, in addition to special apparatus, such as meet the individual requirements of students doing advanced work. In addition to the collection of books here shelved, there are important

foreign and English periodicals, as well as monographs and other separata. The extensive collections, both biologic and systematic, offer unusual facilities for comprehensive instruction in the various groups. A more extended notice of these collections will be found under the head of "Museums." A large series of cabinets has been especially arranged to aid in teaching. These are supplemented by models illustrating developmental processes. The material for study and apparatus at hand afford exceptional opportunities for research work.

ADVICE AS TO CHOICE OF COURSES.

The following courses are designed to meet the needs of two classes of students, viz.:

(1) Those who in a general education desire some knowledge of the subject-matter and general principles of animal biology, as illustrated by insects. For this class, courses 1 to 5, inclusive, are adapted. Course 6 may be taken independently.

(2) Those preparing to become teachers and investigators engaged in research work. After the fundamental courses, the aims of each student will largely determine the selection of advanced courses. The requirements for those expecting to teach entomology in secondary schools are courses 1 to 4, inclusive, and course 7.

COURSES FOR UNDEGRADUATES ONLY.

1.—Introductory Entomology. Two hours, 1st term, Tuesday and Thursday, 1:30 to 3:30. This course includes a general survey of the morphology, distribution, classification and behavior of the orders of insects. The work in the laboratory consists (1) of an anatomical study of one or more types, followed by a comparison of each type studied with closely allied forms. (2) Exercises in classification of orders and families. The laboratory work is conducted by means of typewritten laboratory directions prepared by the instructors. A series of lectures accompany the laboratory work. Open to all students of the College. Associate Professor Hunter.

2.—Introductory Entomology. A continuation of course 1. 2d term, Monday, Wednesday, and Friday, 1:30 to 3:30. Open to all students of the College. Professor Hunter.

3.—Systematic Entomology I. Three hours, 1st term, Monday, Wednesday, and Friday, 1:30 to 3:30. This course gives special prominence to the systematic position of the orders studied. The laboratory work consists of (*a*) determination of species; (*b*) careful morphological study of organs with special reference to their evolution; (*c*) when possible, an extended study of the species of one or more families. In addition to the text, monographs and current

literature of special groups will be used. Open to all students of the College. Associate Professor Hunter.

4:—Systematic Entomology II. Two hours, 2d term, Tuesday and Thursday, 1:30 to 3:30. A continuation of the work of course 3. Open to all students of the College. Associate Professor Hunter.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

5.—Ecology. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. Lectures, readings and field-work on the behavior of insects and their relation to their environments. Associate Professor Hunter.

6.—Economic Entomology. Two hours, 1st term, Tuesday and Thursday, at 10:15. Lectures, readings and observations in field on forms of economic value: the beneficial—their habits, life-histories; the injurious—their habits, life-histories, and modes of dealing with such forms. The economic status of the class Insecta. Associate Professor Hunter.

7.—Teachers' Course. Three hours, 2d term, 3:30 to 5:30. Laboratory course adapted to those who expect to teach. Lectures upon life-histories, insect relationships, choice of materials, and modes of presentation. Field-work on habits of social insects. Professor Hunter.

8.—Seminary. One hour. Designed for discussion of special subjects and reports upon the more notable current advances in this branch of science.

COURSES FOR GRADUATES ONLY.

9.—Original Investigation. Throughout the year, by appointment. Research work in parthenogenesis. Associate Professor Hunter.

10.—Original Investigation. By appointment, throughout the year, including the summer months. Taxonomy, Insecta. Critical study of Kansas fauna. This course has for its object a survey of the species found in the state. Associate Professor Hunter.

11.—Morphological Development. Problems assigned with reference to the attainments of individual students. Throughout the year, by appointment. Assistant Professor Hunter.

## ORGANIC EVOLUTION.

Professor Snow.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

1.—The Principles of Evolution. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. This course includes a history of the doctrine of evolution, and a consideration of the facts which support the doctrine. These facts include the relation of the extinct forms of past ages to the present, the series of embryological changes in the higher animals, the fertilization of flowers by insects, and the geographical distribution of plants and animals. The obsolete theory of spontaneous generation receives attention. Professor Snow.

2.—Principles of Evolution. Five hours, 1st half of 2d term, daily, at 10:15. This course is a continuation of course 1, and includes a discussion of the various theories which have been proposed to account for evolution; the comparative influence of environment and heredity, the origin of the races of mankind, the origin of human intellect and conscience, and the relation of the law of evolution to the other great laws of the natural and spiritual world. These two courses are illustrated by occasional stereopticon exhibits. Professor Snow.

## FRENCH.

(See Romance Languages and Literatures.)

## GEOLOGY AND MINERALOGY.

Professor Haworth.
Assistant Professor Kay.

EQUIPMENT.

The library is of first importance for equipment in geology, and apparatus and museums next. The library includes practically all the reports of public surveys made in America, both national and state, and all the leading text-books and special treatises by the leading authorities of the world. Of particular importance is the large number of topographic sheets and folios of the final mapping of the United States Geological Survey. The geological and mineralogical museums are described elsewhere in this catalogue, to which the reader is referred. Large numbers of maps and papier-mache models of geological and topographic land forms, especially chosen from those now on the market, add greatly to the equipment for good, effective work.

ADVICE AS TO CHOICE OF COURSES.

The following courses in geology are designed to meet the requirements of two classes of students: those wishing to become working geologists, and those wishing only a general outline of the subject as a part of a liberal education. In the former case the student is advised to take all the courses offered, as nearly as possible in the order given, or possibly 4 might be brought in at any time after 1. Should the student desire to give only a limited time to the study, he should begin with 1, after which he may take 2, 3, or 4, in any order, with 4 most desirable for those who take only a single year's course.

Course 1 is open to all students of the College, and courses 1, 2, 3, 4 and 5 are open to Juniors and Seniors; courses 6, 7 and 8 are open to graduate students; and courses 1, 5 and 9 to advanced undergraduate and to graduate students.

## *Geology.*

COURSES FOR UNDERGRADUATES.

1.—Elements of Physical Geology. Three hours, both terms, Monday, Wednesday, and Friday, at 11:15. A study of the elementary principles of general geology, including physical conditions throughout geologic time and the formation of continents; nature and origin of the different kinds of rocks and the rock-forming materials; the destructive process of erosion or denudation, and the economic products obtained from the ground by the various mining operations. Professor Haworth.

2.—Areal Geology I. Two hours, Tuesday and Thursday, at 10:15. This course is an extension of course 1, with special reference to the stratigraphy of land areas, continental development, the history of animal and plant life upon the earth, and the uses of fossil forms in the identification and correlation of geologic horizons. A special study will also be made of field methods in geology in organizing and conducting geological investigations and geological surveys. It should be taken by all students who contemplate teaching geology or making geological investigations. Must be preceded by course 1. Lectures and library work. Professor Haworth.

3.—Areal Geology II. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. A continuation of course 4. Professor Haworth.

4.—Economic Geology I. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. A general study of the metallic and non-metallic products of the mine, quarry and well, considered from a scientific and a practical standpoint, including the nature, origin,

amount and geographic and geologic distribution of the same. Must be preceded by elementary chemistry and geology 1 or mineralogy 1. Lectures and library work. Professor Haworth.

5.—Economic Geology II. Two hours, 2d term, Tuesday and Thursday, at 9. A continuation of course 4. Professor Haworth.

6.—Physiography. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. A study of the general principles of physiography, with detailed studies of specific areas in latter part of course, including earth movements, general elevation and depression of land areas, rock disintegration, origin and nature of drainage systems and the life-history of rivers, and origin of surface features and causes which have produced them. Must be preceded by geology 1. Lectures and library work. Professor Haworth.

7.—Dynamic Geology I. Two hours, 1st term, Tuesday and Thursday, by appointment. A brief course on the elementary principles of dynamic geology, to follow course 1 or course 2. It will include a study of continental development, mountain areas, and mountain structure and mountain origin, and kindred subjects. Lectures, library and laboratory work. Professor Haworth.

8.—Dynamic Geology II. Three hours, 2d term, Tuesday and Thursday. A continuation of course 7. Professor Haworth.

COURSES FOR GRADUATES.

9.—Dynamic Geology. Graduate students in geology will be provided with opportunity to pursue the study of dynamic geology to any extent desirable, dependent upon the previous training of the student and the object in view. The work may be continued through one or more years, and may be made a major or minor subject for the degree of master of arts or doctor of philosophy. By appointment. Professor Haworth.

10.—Physiography. Opportunity is offered graduate students to pursue the study of physiography for one or more years, dependent upon the previous training and end in view. It may be elected either as a major or minor for the degree of master of arts or doctor of philosophy. By appointment. Professor Haworth.

11.—Economic Geology. Opportunity is offered graduate students to pursue the study of the subject throughout the year for one or more years, and to choose it as a major or minor subject for the degree of master of arts or doctor of philosophy. By appointment. Professor Haworth. Students electing either of the above courses as a major for the degree of doctor of philosophy must devote at least half their time to it for three years, and must present a dissertation embodying the results of original work done in connec-

tion therewith, in accordance with the general conditions governing the granting of this degree by this University and with the requirements of the department of geology.

12.—Summer Field-work. Opportunity is offered advanced students in geology, either graduate or undergraduate, to do field-work in geology in connection with the University Geological Survey of Kansas, under the guidance of the department of geology, for which credit will be given the same as for work done in the classroom and laboratory. By appointment. Professor Haworth.

*Mineralogy.*

1.—Elementary Mineralogy I. Five hours, 2d term, daily, 3:30 to 5:30. A brief course in crystallography, blow-pipe analysis, and systematic mineralogy, consisting of lectures and laboratory work, as follows: Crystallography.—A study of the properties of crystals and the crystal systems, with laboratory exercises, using natural crystals and crystal models. Considerable work is required in drawing crystal forms and measuring crystal angles. Williams's Crystallography will be used as a text. Chemical Mineralogy.—In blowpipe analysis sufficient practice is required to familiarize the student with all the ordinary blowpipe tests for mineral identifications. Physical Mineralogy.—The student is required to become thoroughly familiar with the methods of identifying all the more common minerals by their physical characters, such as crystalline form, cleavage, gravity, luster, streak, hardness, and color. The uses, localities and productions of the minerals of economic importance are discussed. Open to Juniors and Seniors who have had chemistry through qualitative analysis. Assistant Professor Kay.

2.—Elementary Mineralogy II. Five hours, 2d term, daily, 3:30 to 5:30. A continuation of course 1. Assistant Professor Kay.

3.—Systematic Mineralogy. Five hours, 1st term, daily, by appointment. This course is a continuation of mineralogy 1 and 2, including an extended study of mathematical and physical crystallography, including optical properties, crystal measurements with reflection goniometers, crystal projection, and study of the most approved classification of minerals. Open to students who have had mineralogy 1 and 2. Assistant Professor Kay.

4.—Petrography. Three hours, 1st term, Monday, Wednesday, and Friday, by appointment. This course includes a study of the mineralogical and chemical composition of rocks, their origin, structural features, and classification. The laboratory equipment for this course consists of carefully selected collections representing all the principal rock-making minerals, rock families, and rock types,

together with several hundred thin sections for study with the petrographical microscope. The most recent field classification of rocks (Resenbuch's classification) and the quantitative system of classification are discussed. Open to students who have had mineralogy I.

5.—Petrography. Two hours, 2d term, Tuesday and Thursday, by appointment. A continuation of course 4. Assistant Professor Kay.

6. Volcanism and Metamorphism I. Two hours, 1st term, Tuesday and Thursday, by appointment. (1) Volcanoes and volcanic phenomena, with a discussion of the theories concerning them. (2) Principles of metamorphism and the metamorphic rocks. The forces, agents and general processes of metamorphism; the classification and description of the metamorphic sedimentary and the metamorphic igneous rocks. Van Hise's Treatise on Metamorphism will be used as a text. Open to students who have had geology I and mineralogy I. Assistant Professor Kay.

7. Volcanism and Metamorphism II. Three hours, 2d term, Monday, Wednesday, and Friday, by appointment. A continuation of course 6. Assistant Professor Kay.

## GERMANIC LANGUAGES AND LITERATURES.

Professor Carruth.
Assistant Professor Engel.
Assistant Professor Corbin.
Mr. Kruse.
Mr. ——.
Mr. Bahner, Fellow.

### EQUIPMENT.

The German department has an excellent stereopticon and 600 stereopticon slides, illustrating scenery, costumes, and biography; a small number of excellent photographs and prints in frames; a complete set of twenty German wall-maps, showing the various separate states; and a few busts. There are 2200 volumes in the library of the German department, and five philological and seven literary journals are received.

There has just been purchased a valuable collection of 3000 unbound dissertations and school programs, covering all fields of Germanistic scholarship. With the present library and this acquisition of special studies, the German department will be prepared to encourage graduate study at the University of Kansas in Germanic languages.

The Deutscher Verein owns a piano, which is used for accompanying the German songs of the verein.

ADVICE AS TO CHOICE OF COURSES.

Students who plan to become teachers of German in high schools and academies should consult with the head of the department before the close of the Sophomore year. An outlined course for the four college years will be found on the department bulletin board, and is recommended to the careful attention of those concerned.

Courses 1 to 9, inclusive, are open to all students of the College. Courses 10 to 19 and 21 and 22 are open to both undergraduates in the College and to graduate students. Course 20 is open to Juniors and Seniors only. The full amount of Latin, 1, 2, 3, for entrance is required as preparation for German 1 and 2.

COURSES FOR UNDERGRADUATES ONLY.

1.—Outline of Grammar. Five hours, 1st term, at 8, 9, 11:15, and 1:30. The first eighteen lessons of Otis' Grammar, with composition exercises. Carruth's Reader, about fifty pages. Professor Carruth, Assistant Professor Engel, Assistant Professor Corbin, and Mr. Kruse. The eight o'clock division is for students who intend to make German a major study. In this more insistence will be laid upon speaking German. The nine o'clock division is for students who expect to take only a minimum of German. The other divisions will be determined by convenience of hours alone. Practice classes in beginning German will be conducted at eight o'clock and nine o'clock. To these a limited number of students who lack the requirement of entrance Latin will be admitted.

2.—Carruth's Reader, completed, Zschokke, Kleist, Heyse, (100 pp.), and Schiller's Wilhelm Tell (complete.) Also special exercises in word order and auxiliary verbs, and sight-reading. Five hours, 2d term, at 8, 9, 11:15, and 1:30. Assistant Professor Engel, Assistant Professor Corbin, Mr. Kruse, and Mr. ———.

3.—Review of Grammar. Freytag's Die Journalisten. Geschichte des 30-jährigen Krieges. Sight-reading. Five hours, 1st term, at 8, 9, 11:15, and 3:30. Assistant Professor Engel, Assistant Professor Corbin, Mr. Kruse, and Mr. ———.

4.—Schiller's Wallenstein (complete). Outline of German literature in dictations and lectures. Five hours, 2d term, at 8, 9, 11:15, and 3:30. Assistant Professor Engel, Assistant Professor Corbin, Mr. Kruse, and Mr. ———.

5.—German Composition. Five hours, 1st term, at 10:15. Translation of connected English, Poll's or v. Jagemann's German Prose Composition, v. Jagemann's German Syntax, Fossler's Practical German Conversation. Assistant Professor Engel and Assistant Professor Corbin.

6.—Goethe's Faust (parts I and II). Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Professor Carruth and Assistant Professor Corbin.

7.—Goethe's Iphigenie. Two hours, 1st term, Tuesday and Thursday, at 11:15. Professor Carruth and Assistant Professor Corbin.

8.—Lessing's Nathan der Weise. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15 or 11:15. Professor Carruth and Assistant Professor Engel.

9.—Schiller's Die Braut von Messina. Two hours, 2d term, Tuesday and Thursday, at 10:15 or 11:15. Professor Carruth and Assistant Professor Engel.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

10.—German Literature. Five hours, 1st term, at 10:15. An outline history. Lectures, the class following Scherer, Francke, or Gostwick and Harrison. Essays and criticisms by members of the class. Open only to students who have had courses 3 and 4. (Not given in 1905–'06.) Professor Carruth.

11.—German Literature of the Eighteenth Century. Five hours, 2d term, at 10:15. Klopstock, Wieland, Lessing, Herder, Goethe, and Schiller. Reading of chief works, with reviews. (Not given in 1905–'06.) Professor Carruth.

12.—German Historical Novels. Five hours, 1st term, at 10:15. Hauff, Scheffel, etc. Careful reading in class of one work by each author; others outside. Lectures on the history of the novel and on methods and schools in fiction. Theses on separate authors and on the whole course, by members of the class. Professor Carruth.

13.—German Historical Novels (continued.) Five hours, 2d term, at 10:15. Professor Carruth.

Courses 14, 15, 16, 17, 18 and 19 are primarily for graduates.

14.—History of the German Language. Two hours, 1st term, Tuesday and Thursday, at 1:30. Introduction to philological study. Lectures and library work. Professor Carruth.

15.—Gothic. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. Phonetics, grammar, and translation. Professor Carruth.

16.—Old Norse. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. Noreen's Altnordische Grammatik; Vigfusson and Powell's Reader. Professor Carruth.

17.—Middle High German. Five hours, 2d term, by appoint-

ment. Paul's Mittelhochdeutsche Grammatik. Nibelungenlied. Hartmann, Der arme Heinrich. Selections from Walther von der Vogelweide. Lectures. Assistant Professor Engel.

18.—The Romantic School in Germany. Three hours, 2d term. at 4:30. Work concentrated on lyric poetry. Assistant Professor Corbin. (Not given in 1905–'06.)

19.—Luther and the Sixteenth Century. Two hours, 2d term, Tuesday and Thursday, by appointment. Reading and grammatical study of the German literature of the reformation, preceded by an outline of historical German grammar. Professor Carruth.

20.—Teachers' Course. Five hours, 1st or 2d term. Advanced grammar, with theory and practice of language teaching. Intended especially for those who desire to fit themselves for teaching German in high schools. Open only to the best students of the department. Professor Carruth and Assistant Professor Corbin.

21.—The Lyrics and Ballads of Goethe and Schiller. Three hours, 2d term, Monday, Wednesday, and Friday, at 4:30. This course alternates with 18, and is offered for 1905–'06. Assistant Professor Corbin.

22.—Germanic Mythology. Two hours, 2d term, Tuesday and Thursday, at 1:30. Professor Carruth.

## GREEK.

Professor Wilcox.
Associate Professor Sterling.

### EQUIPMENT.

Nineteen casts of sculpture, four models, a relief-map, numerous wall maps, 765 photographs, 480 plates (many colored), 49 illustrated folios, 2200 volumes in library, 14 current periodicals, 1500 stereopticon slides.

### ADVICE AS TO CHOICE OF COURSES.

Those who aim to become teachers of Greek or Latin or any other language, or who take Greek for general culture or discipline, should take the courses in order from 1 to 18, and 27 and 28, or as many of them as they have not taken before entering the University, or have time to take. Students preparing for the ministry will find it best to follow the same plan, and take the course in New Testament Greek in addition, or in place of some course in classical Greek they might otherwise take. Students who aim simply at reading the New Testament in the original for their own pleasure or profit can accomplish that by taking courses 21 and 22. Students of science and

English may get in course 19 a good working knowledge of the scientific and other English words that are derived from Greek; this course may also serve as an introduction to classical Greek, being followed by courses 20 and 4. Students of all literatures who can give no more time to Greek may get a very good idea of the content of Greek literature, and especially a valuable knowledge of mythology, from courses 23 and 24, or a partial knowledge from either of those courses. Those who desire an introduction to the architecture of all periods may get it in course 25; to the sculpture and painting of all periods, in course 26. A very rapid survey of the great arts of the Greek and Roman periods is made in course 27; of mediæval and modern times, in course 28. Greek students should take also the courses in Greek and Roman history, in the history of philosophy, and as many literary courses as possible.

COURSES FOR UNDERGRADUATES ONLY.

1.—ELEMENTARY GREEK. Four hours, 1st term, Tuesday, Wednesday, Thursday, and Friday, at 9. Gleason's Greek Primer, or White's First Greek Book. Professor Sterling.

2.—XENOPHON'S ANABASIS, or equivalent prose. Four hours, 2d term, Tuesday, Wednesday, Thursday, and Friday, at 9. Professor Sterling.

3.—HOMER'S ILIAD. Three hours, first term, Monday, Wednesday, and Friday, at 9. Professor Wilcox.

4.—THUCYDIDES, selections. Two hours, 1st term, Tuesday and Thursday, at 9. Professor Wilcox.

5.—HOMER'S ODYSSEY. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. Professor Wilcox.

6.—HERODOTUS (selections). Two hours, 2d term, Tuesday and Thursday, at 9. Professor Wilcox.

7.—PLATO'S APOLOGY AND CRITO. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Professor Sterling.

8.—SOPHOCLES. Two hours, 1st term, Tuesday and Thursday, at 11:15. Professor Sterling.

9.—EURIPIDES AND ÆSCHYLUS. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. Professor Sterling.

10.—DEMOSTHENES. Philippics. Two hours, 2d term, Tuesday and Thursday, at 11:15. Professor Sterling.

19.—THE GREEK IN ENGLISH. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. The elements of Greek with especial reference to English. This course may serve as an introduction to classical Greek. Professor Sterling.

20.—Attic Greek. Two hours, 2d term, Tuesday and Thursday, at 10:15. Stories, legends, and selections from prose authors. Continuation of 19. Professor Sterling.

21—Elementary New Testament Greek. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. Professor Sterling.

22.—New Testament. Two hours, 1st term, Tuesday and Thursday, at 10:15. Reading of select passages in Westcott & Hort's text. Professor Sterling.

27.—Greek Art. One hour, 1st term, Monday, at 4:30. The essentials and fundamental principles of Greek architecture, sculpture, and painting, and their survivals in Roman art. Illustrated lecture and two hours' outside reading. Professor Wilcox.

28. Greek Art in Relation to Mediæval and Modern Art. One hour, 2d term, Monday, at 4:30. The essential and fundamental principles of mediæval and modern art, with especial reference to survivals and revivals of ancient art elements. Illustrated lecture and two hours' outside reading. Professor Wilcox.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

11.—The Clouds of Aristophanes and Memorabilia of Xenophon. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15, or by appointment. Professor Wilcox. (Given in 1905–'06.)

12.—The Gorgias of Plato. Two hours, 1st term, Tuesday and Thursday, at 10:15, or by appointment. Professor Wilcox. (Given in 1905–'06.)

13.—Greek History and Politics. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15, or by appointment. Representative selections of Greek life and thought in Wilamowitz-Moellendorf's Reader. Professor Wilcox. (Given in 1905–'06.)

14.—Greek Philosophy, Cosmogony, etc. Two hours, 2d term, Tuesday and Thursday, at 10:15, or by appointment. Selections in Wilamowitz-Moellendorf's Reader on philosophy, cosmogony, astronomy, mathematics, medicine, esthetics, and grammar. Professor Wilcox. (Given in 1905–'06.)

15.—Greek Literary Criticism. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15, or by appointment. The Frogs of Aristophanes and Chœphoroi of Æschylus. Aristotle's Poetics. Professor Wilcox. (Given in 1906–'07.)

16.—Lyric Poetry (Elegiac and Iambic). Two hours, 1st term, Tuesday and Thursday, at 10:15, or by appointment. Professor Wilcox. (Given in 1906–'07.)

17.—Greek Literary Criticism. Two hours, 2d term, Tues-

day and Thursday, at 10:15, or by appointment. The Electras of Sophocles and Euripides and Aristotle's Poetics. Professor Wilcox. (Given in 1906–'07.)

18.—Lyric Poetry (Melic). Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15, or by appointment. Alcæus, Sappho, Simonides, Pindar, and Bacchylides. Professor Wilcox. (Given in 1906–'07.)

23.—Greek Poetry in Translations. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Lectures, recitations, private reading, writing of themes. Professor Wilcox.

24.—Greek Prose Writers in Translations. Two hours, 2d term, Tuesday and Thursday, at 11:15. Lectures, recitations, private reading, writing of themes. Professor Wilcox.

25.—Greek Architecture. Two hours, 1st term, at 11;15. Includes the fundamental principles of all styles, with especial reference to the survivals and revivals of Greek elements. Lectures, private reading, recitations. Professor Wilcox.

26.—Greek Sculpture and Painting. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. Includes for purposes of comparison and appreciation a summary view of the sculpture and painting of later and modern times. Professor Wilcox.

## HARMONY.

(See Music.)

## AMERICAN HISTORY AND POLITICAL SCIENCE.

Professor Hodder.
Mr. Rhodes, Fellow.

### EQUIPMENT.

The University library is supplied with all the important secondary authorities in American history, and with a considerable amount of source material. Where original editions of early books have been unobtainable, such reprints as Thwaites's "Jesuit Relations" and the Goldsmid and Macklehose editions of "Hakluyt" have been substituted. The sets of Kansas state documents, of congressional debates and of American state papers are complete. The set of congressional documents begins with the second session of the twenty-eighth Congress. For the colonial period, the library has the colonial series of calendars of British state papers, the New York colonial documents, the New Jersey archives, and other similar sets; and for the period of discovery, the works of Harrisse and the atlases of Nordenskiold and Kretchmer. Particular attention has been

given to the collection of books relating to Kansas and the trans-Missouri region, and a collection of American travels has been begun. Free access to all but the rarest books is given to students in the history and sociology reading-room. The supply of maps and atlases for class and reference purposes is adequate.

ADVICE AS TO CHOICE OF COURSES.

The department provides two years of continuous daily work, covering colonial history and constitutional and international law during the first year, and the political and constitutional history of the United States during the second. A seminary for original research is provided for students who have completed the two years' course. Students desiring to give less than two years to American history may take any of the courses desired, subject only to the limitation that the courses in "Presidential Administrations" are open only to Seniors and Graduates, unless preceded by constitutional law. No short general course in American history is offered, upon the theory that it is better to cover a part of the field thoroughly than the whole superficially. Students desiring a recommendation to teach civil government must take courses 1 and 3, and students desiring a recommendation to teach American history must take courses 2 and 5.

UNDERGRADUATE COURSE.

1.—GOVERNMENT OF THE UNITED STATES. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. A study of the American federal state, including, first, a statement of some of the more important principles of political science with practical applications; second, an historical survey of the origin and development of American political institutions; third, a study of national, state and local governments as they now exist, and fourth, a consideration of the policies of the state in regard to great public questions that now confront it. Recitations and assigned reading. Open to Sophomores and Juniors. Mr. ———.

ADVANCED UNDERGRADUATE AND GRADUATE COURSES.

2.—AMERICAN COLONIAL HISTORY. Five hours, 1st term, daily, at 2:30. This course covers the discovery of America, the origin and development of the English colonies, the causes and results of the revolution, and the formation of the constitution. Professor Hodder.

3.—AMERICAN CONSTITUTIONAL LAW. Three hours, 2d term, Monday, Wednesday, and Friday, at 2:30. A study of the judicial construction of the constitution of the United States from a political rather than from a legal point of view. Recitations and reports on cases. Professor Hodder.

4.—PUBLIC INTERNATIONAL LAW I. Two hours, 2d term, Tues-

day and Thursday, at 2:30. A statement of fundamental principles, illustrated by cases drawn from American diplomatic history. Lectures. Professor Hodder.

5.—Presidential Administrations I. Five hours, 1st term, daily, at 3:30. The political and constitutional history of the United States from 1789 to 1840. A topical treatment of the most important phases of American history. The principal subjects of study are financial and tariff history, foreign relations, the rise and growth of political parties, the history of the slavery controversy and the expansion of the United States. Open to all Seniors and Graduates. Open to other students by special arrangement. Professor Hodder.

6.—Presidential Administrations II. Five hours, 2d term, daily, at 3:30. The political and constitutional history of the United States from 1840 to 1868. Treats the causes and results of the civil war. Continuation of course 5. Professor Hodder.

GRADUATE COURSES.

7.—Public International Law II. 1st term, hours by appointment. Advanced course based upon Hall's treatise and Scott's Cases. Must be preceded by course 4. Professor Hodder.

8.—Seminary in American History. 1st and 2d terms, Saturday, 10:15 to 12:15. An investigation, based upon sources, of limited periods or particular topics. The subject for 1905–'06 will be the occupation of the trans-Missouri region. Professor Hodder.

## EUROPEAN HISTORY.

Professor Abbott.
Assistant Professor Becker.
Assistant Professor ——.
Mr. Iles, Fellow.

EQUIPMENT.

The department of European history is provided with over fifty large wall-maps, forty smaller maps, besides historical charts and the more important historical atlases, together with a considerable number of framed portraits, engravings, and photographs. With the departments of American history, sociology, and economics, it occupies the large reading- and seminary-room on the second floor of the Spooner Library, and with the former it shares a smaller room for the use of more advanced students in investigation and seminary work. The general collection of books in European history comprises, in addition to a reference library, such sets as the Monumenta Historica Germaniæ, the Scriptores Rerum Italicarum, the Parliamentary History, Reports of the Historical MSS. Commission,

the English Statutes at Large, the Journals of the House of Lords and of the House of Commons, and the series of English state papers, domestic, foreign and colonial, now being completed as rapidly as possible.

ADVICE AS TO CHOICE OF COURSES.

The courses in European history are designed for three classes of students—those desiring only a general knowledge of history, those desiring to use their history in connection with work in other lines, and those desiring to specialize in history. The courses are so arranged as to offer continuous work along several lines. A course in general European history should cover courses 3, 4, 5, 6, 8, 9, 12, and 13, inclusive. In English history, courses 1, 2, 7 and 16 are to be noted. For classical students, courses 3, 4 and 15 will be found of special importance. For those specializing in modern languages, courses 5, 6, 8, 9, 12 and 13 will best supplement the work in French, Italian, and Spanish. For those specializing in English, courses 1, 2, 7, 12, and 13. The attention of those working in American history is especially called to the courses in English history and colonization, namely, 1, 2, 7, 10, and 11, as well as to courses 12 and 13 in modern Europe. Special attention of those doing most of their work in history and those expecting to teach history is called to courses 17 and 18, in historical method. In general, it is expected that those intending to do work in European history in the Junior and Senior years will have had at least two of the courses offered in the Freshman and Sophomore years. Those expecting to receive recommendations to teach history will find it necessary to have taken courses 1, 2, 3, 4, 5, 6, at least four advanced courses, and the teacher's course, No. 18.

COURSES FOR UNDERGRADUATES ONLY.

1.—English History I, 400–1485. Two hours, 1st term, Tuesday and Thursday, at 8, 9, and 2:30. Open to all students of the College. Designed as an introduction to all history work of the Junior and Senior years. Recitations, with lectures and assigned reading. Assistant Professor Becker and Assistant Professor ———.

2.—English History II, 1485–1832. Two hours, 2d term, Tuesday and Thursday, at 8, 9, and 2:30. A continuation of course 1. Assistant Professor Becker and Assistant Professor ———.

3.—Greek History. Two hours, 1st term, Tuesday and Thursday, at 10:15 and 11:15. Designed, with the following course, as an introduction to Junior and Senior work in European history, and to accompany work in the classical departments. (See course 27, Greek department.) Recitations, with lectures and assigned reading.

Open to all students of the College. Assistant Professor Becker and Assistant Professor ———.

4.—Roman History.—Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15 and 11:15. Designed, with the preceding course, as an introduction to Junior and Senior work in European history, and to accompany work in the classical departments. (See Greek course 27.) Recitations, with lectures and assigned reading. Open to all students of the College. Assistant Professor Becker and Assistant Professor ———.

5.—Mediæval History. Three hours, 1st term, Monday, Wednesday, and Friday, at 8, 9, 11:15, and 2:30. The history of Europe from the fall of Rome to the renaissance. A general course, designed, with the following course, especially as an introduction to the work in modern European history. (See also Greek course 28.) Recitations, lectures, and assigned reading. Open to all students of the College. Assistant Professor Becker and Assistant Professor ———.

6.—Modern European History. Three hours, 2d term, Monday, Wednesday, and Friday, at 8, 9, 11:15, and 2:30. General course. The history of Europe from the renaissance to 1763. A continuation of the above, and designed, with it, to form an introduction to work in modern European history. Recitations, lectures, and reading. Assistant Professor Becker and Assistant Professor ———.

COURSES FOR UNDERGRADUATES AND GRADUATES.

7.—English Constitutional History. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. A general course in the elements of the constitution and administration of England, with special reference to modern English government and its constitutional principles at home and abroad. Open to Juniors, Seniors, and Graduates. Professor Abbott.

8.—Europe in the Seventeenth and Eighteenth Centuries. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. The history of Europe from 1600 to 1789, with the emphasis on the political, economic and intellectual conditions which prepared the way for the French revolution. Lectures and recitations on assigned topics. Assistant Professor Becker.

9.—The French Revolution and Napoleonic Era. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. The history of Europe from 1789 to 1815. With additional requirements of reading and reports, may be counted as a graduate course. Lectures, recitations, and assigned reading. Open to Juniors and Seniors. Professor Abbott.

10.—European Colonization I. Two hours, 1st term, Tuesday and Thursday, at 1:30. The history of Europeans outside of Europe, from the sixteenth century to the present. A study of exploration, conquest, and settlement, together with the history of European peoples, colonies, and dependencies (Spanish America, Canada, Australia, India, etc.) Special attention will be given to the growth of the British empire, particularly in the nineteenth century. Open to Juniors, Seniors, and Graduates. With additional requirements of reading and reports, may be counted as a graduate course. Lectures, recitations, and assigned reading. Professor Abbott.

11.—European Colonization II. Two hours, 2d term, Tuesday and Thursday, at 1:30. A continuation of preceding course. Professor Abbott.

12.—Political and Constitutional History of Modern Europe I. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. The history of Europe, including England, from 1815 to the present. Lectures, recitations, and assigned reading. Open to Juniors with permission, Seniors and Graduate students. Professor Abbott.

13.—Political and Constitutional History of Modern Europe II. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. A continuation of preceding course. Professor Abbott.

14.—European Constitutions. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. A study of the constitutional development of the principal nations, exclusive of England, particularly in the nineteenth century. Lectures, recitations, and assigned reading. (Not given in 1905–'06.) Professor Abbott.

15.—Later Roman Empire. Two hours, 2d term, Tuesday and Thursday, at 10:15. Political and institutional history of the later Roman and Byzantine empire, from the third to the fifteenth century. Lectures, recitations, and reading, Assistant Professor ———.

16.—Advanced English Constitutional History. Three hours, 2d term, hours to be arranged. An advanced course in the constitutional history of England, chiefly from the documents. May be in connection with course 6 or separately. Professor Abbott.

17.—Historical Method. One hour, 1st term, Tuesday, at 2:30. Investigation and presentation. A course in the principles of historical investigation and composition. Designed primarily for advanced students specializing in history and looking toward preparation for a thesis. Required of all candidates for a master's degree. Study and practice in investigation and writing. Lectures, reports,

assigned reading, and comparative study of historical compositions, theses, monographs, and histories. Professor Abbott and Assistant Professor Becker.

18.—Historical Method. One hour, 2d term, Tuesday, at 2:30. Teacher's course. Designed primarily for those expecting to teach history in secondary schools. Required of all candidates for a teacher's certificate in history. Lectures and reports on methods, materials and preparation for teaching bibliography and uses of library. Assigned reading and conferences. Professor Abbott, Assistant Professor Becker, and Miss Watson.

19. Mediæval Institutions. A study of the political and ecclesiastical institutions of western Europe from the ninth century to the fourteenth. Lectures, recitations, and reading. (Given in 1904–'05; not given in 1905–'06.) Assistant Professor Becker.

20.—Renaissance and Reformation. Two hours, 2d term, Tuesday and Thursday, at 11:15. A more advanced study of the intellectual and religious revolt of the fifteenth and sixteenth centuries. (Given in 1905–'06.) Assistant Professor Becker.

21.—Historical Writers I. One hour, 1st term, Monday, at 2:30. In this and the ensuing course, the work of representative historians will be read; one author will be taken up each term. Required of candidates for a master's degree, and recommended to all advanced students in history. Professor Abbott.

22.—Historical Writers II. One hour, 2d term, Monday, at 2:30. A continuation of course 20. Professor Abbott.

23.—Seminary. Four hours, 1st term, by appointment. Graduate students and such Seniors as have permission will be admitted to the seminary, work in which will vary from year to year. While an endeavor will be made to fit particular conditions of the year and the needs of the students of that year in so far as possible, in general the plan will be to alternate from year to year between mediæval and modern European history, and within those fields to take up the study of the history of different countries and periods, as may seem advisable. Students who are planning to do advanced work are therefore requested to consult the instructor at as early a date as possible. Professor Abbott.

24.—Seminary. Four hours, 2d term, hours by appointment. A continuation of course 20. Professor Abbott.

Thesis. Candidates for the degree of master of arts in this department are subject to the usual requirement of a thesis written under the direction of the department. This must be accompanied by reports and conferences, and should be preceded or accompanied

by course 14. Hours for conference to be arranged with instructor. 2d term. Professor Abbott.

History Conference. The department of European history, with the cooperation of other departments in the College, carries on a conference of those interested in history and allied subjects, open to all members of the University. The meetings occur, ordinarily, once every two weeks between the Christmas and Easter recesses. Among the subjects of papers read before the conference during the past year were the following: "The Niebelungen Lied" (illustrated), Professor Carruth; "Vercingetorix," Professor Walker; "Books and Book-making" (illustrated), Miss Watson; "Dante," Professor Galloo.

## ITALIAN.

(See Romance Languages and Literatures.)

## LATIN LANGUAGE AND LITERATURE.

Professor Walker.
Assistant Professor Oliver.
Mr. Hendrix.

### EQUIPMENT.

The department has about 1500 bound volumes, besides a considerable number of dissertations and other pamphlets; and its annual library appropriation enables it both to secure most of the important new books relating to its work and to fill up gaps in its present equipment. It has been the aim to secure a few of the most important editions of all authors and the most important works representing all branches of Latin study; but especial pains have been taken to provide an adequate apparatus for seminary work on Cæsar, Horace, Juvenal, and Vergil. There is also a good equipment for such courses as topography, private life, epigraphy, and political institutions. The department receives several classical journals and sets of studies and reports, and has complete sets of a few of the most important of them. In addition to the illustrative material of the classical museum, the department has about 1000 photographs, illustrating especially the courses in topography and private life; and these are being added to rapidly.

### ADVICE AS TO CHOICE OF COURSES.

To secure either a recommendation as teacher of Latin or a teacher's diploma in Latin, the student must elect at least twenty-five hours beyond course 3. Courses 4*a* and 11 must be included. Other courses especially recommended to those who intend to teach are 5, 7, 8, 10, 12, 22, and 23, and the course in ancient history given

by the department of European history. Those who wish to do the best work in Latin will need, in addition to a greater amount of Latin, some Greek and a reading knowledge of German.

COURSES FOR UNDERGRADUATES ONLY.

1.—Preparatory Prose Composition. Two hours, 1st term, Tuesday and Thursday, at 11:15. Bennett's Prose Composition, entire. Students whose preparatory course in Latin has been deficient in prose composition are required to take this course, for which no college credit will be given. Assistant Professor Oliver.

2.—Cicero's Orations. Five hours, 2d term, Monday, Tuesday, Wednesday, Thursday, and Friday, at 2:30. The four against Catiline, the one for the Manilian Law, and the one for the Poet Archias. Lessons 23–44 of Bennett's Prose Composition. This course may be taken for college credit by students who enter with Cæsar and Vergil. It is required, without college credit, of those who enter with only Cæsar. Students who make up an entrance condition in Cicero under any private tutor will be examined by the department in both translation and composition. Mr. Hendrix.

3.—Vergil's Æneid (six books). Five hours, 1st term, Monday, Tuesday, Wednesday, Thursday, and Friday, at 8. With the study of mythology and careful practice in metrical reading. The chief stress will be laid on the literary side of the work. Open only to those who enter with three years of Latin and without Vergil. Mr. Hendrix.

3*a*.—Vergil's Æneid (selections from the first six books). Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. Except in the amount read, this course is the equivalent of 3, and students who complete it satisfactorily will be admitted to course 4 or 4*a*. Mr. Hendrix.

4.—Cicero (De Senectute) and Livy (one book). Five hours, 1st term, Monday, Tuesday, Wednesday, Thursday, and Friday, at 9. With prose composition and a thorough review of the grammar. Open to all students who have had Cicero's Orations and Vergil. Assistant Professor Oliver.

4*a*.—Cicero (De Senectute). Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15; and 2d term, Monday, Wednesday, and Friday, at 8. With prose composition and a thorough review of the grammar. This course may be taken instead of 4 by students whose preparatory work has been well done, and those who complete it satisfactorily will be admitted to course 5. 1st term, Mr. Hendrix; 2d term, Assistant Professor Oliver.

4*b*.—Livy (one book). Two hours, 1st term, Tuesday and Thurs-

day, at 11:15; and 2d term, Tuesday and Thursday, at 8. This course is open only to those who have taken or are taking 4*a*. 1st term, Mr. Hendrix; 2d term, Assistant Professor Oliver.

5.—Horace (Odes). Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30; and 2d term, Monday, Wednesday, and Friday, at 9. With careful practice in metrical reading. The chief stress will be laid on the literary side of the work. Must be preceded by course 4 or 4*a*. Assistant Professor Oliver.

6.—Terence (two plays). Two hours, 2d term, Tuesday and Thursday, at 9. Must be preceded by course 4 or 4*a*. Professor Walker.

7.—Cicero's Letters. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. The chief stress will be laid on the historical points involved, so that the student gets a good knowledge of the period in which Cæsar and Cicero lived. The course is therefore especially helpful to teachers. Must be preceded by five hours beyond course 3. Professor Walker.

8.—History of Roman Literature. Two hours, 1st term, Tuesday and Thursday, at 10:15. Mackail's Latin Literature, supplemented by lectures. Open to all students. Assistant Professor Oliver.

9.—Horace (Satires and Epistles). Two hours, 2d term, Wednesday and Friday, at 10:15. Must be preceded by eight hours beyond course 3. Professor Walker.

10.—Private Roman Life. One hour, 2d term, Monday, at 10:15. Johnston's Private Life of the Romans, supplemented by occasional lectures and the use of illustrative material. Open to all students. Assistant Professor Oliver.

11.—Prose Composition. Two hours, 2d term, Tuesday and Thursday, at 10:15. Must be preceded by course 4*a*. Mr. Hendrix.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

12.—Advanced Prose Composition. Two hours, 1st term, Tuesday and Thursday, at 2:30. Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3. Professor Walker.

13.—Plautus (three plays). Two hours. (Not given in 1905–'06.) Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3.

14.—Vergil's Eclogues and Georgics. Two hours, 2d term, Tuesday and Thursday, at 2:30. Open to Juniors, Seniors, and

Graduates. Must be preceded by twelve hours beyond course 3. Professor Walker.

15.—Lucretius. Three hours. (Not given in 1905–'06.) Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3.

16.—The Annals of Tacitus. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3. Assistant Professor Oliver.

17.—Juvenal. Three hours. (Not given in 1905–'06.) Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3.

18.—Literature of the Empire. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. A study of the history of literature under the empire, supplemented by the reading of portions of the most important works not read in courses 16 and 17. Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3. Assistant Professor Oliver.

19.—The Topography of Rome. Two hours, 2d term, Tuesday and Thursday, at 10:15. Lectures and reading. Illustration by the use of photographs and stereopticon. Each member of the class will present a written report on a subject investigated by himself. Open to all Juniors, Seniors, and Graduates. Assistant Professor Oliver.

20.—Roman Political Institutions. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. A study of the development and form of the Roman governmental system through the republic and the early empire. The course will be conducted by lectures and assigned readings. Open to all Juniors, Seniors, and Graduates who have had the full amount of preparatory Latin. This course will be given in 1905–'06 if course 29 is not given. Mr. Hendrix.

21.—Investigation in Roman Political Institutions. Two hours, 2d term, Tuesday and Thursday, at 1:30. Given only in connection with course 20. This course will be conducted by additional lectures, and by additional investigations by members of the course. Open to Seniors and Graduates who have specialized in Latin. Mr. Hendrix.

22.—Cæsar's Gallic Campaigns. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. A critical study of the Gallic war, with especial reference to military, historical and geographical questions. The course is intended both as an introduction to the methods of the Graduate seminary and as a practical course for

teachers. Open to properly prepared Seniors and to Graduates. Professor Walker.

23.—VERGIL. Three hours, 2d term, Monday, Wednesday, and Friday, at 2:30. A rapid survey of the contents of the Æneid, and a critical study of selected passages which involve difficulties of interpretation or of textual criticism. The course is intended both as an introduction to the methods of the graduate seminary and as a practical course for teachers. Open to properly prepared Seniors and to Graduates. Professor Walker.

24.—LATIN EPIGRAPHY. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. This course has as its object an acquaintance with the forms and subject-matter of Latin inscriptions. Members will be assigned investigations of the contributions of epigraphy to political, constitutional and economic history and to other fields. Open to Seniors and Graduates who have specialized in Latin. The course will be given in 1905–'06 if course 28 is not given. Mr. Hendrix.

25.—INVESTIGATION IN LATIN EPIGRAPHY. Two hours, 1st term, Tuesday and Thursday, at 10:15. Given only in connection with course 24. Additional investigation of special topics will be expected of members of the course. Mr. Hendrix.

COURSES FOR GRADUATES ONLY.

26.—SEMINARY. Five hours, 1st term, at 11:15. An author or some limited portion of the field of Latin study is chosen each year for special investigation by the Graduate students of the department. The work consists largely of papers by members of the seminary, the object of the course being to train students for original investigation. Latin syntax has been chosen for the year 1905–'06. After the first few weeks daily meetings are not held. Professor Walker.

27.—SEMINARY (continued). Five hours, 2d term, at 11:15. A subject for the thesis required of all candidates for the degree of master of arts is expected to present itself in the course of the work, and in the second term a portion of the time is devoted to the working up of that subject. Professor Walker.

28.—SANSKRIT. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. An elementary course, employing Perry's Primer and Whitney's Grammar, with especial attention to the relation of Sanskrit to the other Indo-European languages. The course will be given in 1905–'06 if there is sufficient demand to warrant it. Open to those who have specialized in either Latin, Greek, or German. Mr. Hendrix.

29.—SANSKRIT (continued). Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. Lanman's Reader. Mr. Hendrix.

## MATHEMATICS AND ASTRONOMY.

Professor MILLER.
Associate Professor NEWSON.
Assistant Professor VAN DER VRIES.
Assistant Professor ASHTON.
Mr. SHIRK, Fellow.

### EQUIPMENT.

The following represents the equipment for instruction in mathematics and astronomy:

MATHEMATICS. (*a*) *Models.* Eighty-eight models in wood, manufactured by Schröder, Germany. Fifty-three models of algebraic surfaces, embracing cubics, surfaces of revolution, ellipsoids, paraboloids, and hyperboloids, and intersections of the same, made of plaster of Paris, and weighted strings, also from Germany.

MATHEMATICS. (*b*) *Library.* The University library contains about 1000 volumes of mathematical works, including nearly all the standard treatises on all branches of mathematics. Among others, the following complete sets of journals are specially valuable: The American Journal of Mathematics, Annals of Mathematics, Bulletin and Transactions of the American Mathematical Society, American Mathematical Monthly, Mathematische Annalen, Acta Mathematica, Bulletin de la Societe Mathematique de France, Journal de Mathematiques pures et appliquees, Annali di Matematica, series III. On the bibliographical side are to be found the Jahrbuch der Fortschritte der Mathematik and the Revue Semestrielle des Publications Mathematiques, both sets complete. There are, in addition, the collected works of several of the great mathematicians of the last century. Nearly all the mathematical journals of Europe and America are regularly received.

ASTRONOMY. A six-inch telescope, manufactured by A. Clark & Sons, with eye-glasses ranging in power from 30 to 600; a two-inch transit telescope; a sextant; a twenty-inch celestial globe; 400 astronomical slides; a projection lantern; a full set of E. L. Trouvelot's astronomical plates; star charts and maps; Hagan's Atlas Stellarum Variabilium; Huggins's Atlas of Representative Stellar Spectra; and Atlas Photographique de la Lune, by M. M. Lœwy and M. P. Puiseux.

### *Mathematics.*

### ADVICE AS TO CHOICE OF COURSES.

Students who desire to take a full course in mathematics are advised to complete the following courses 1–8 by the end of the Sophomore year. These are a necessary preparation for the courses for advanced undergraduates and graduates. During the Junior and

Senior years courses 9–18 may be taken in almost any order. These should all be completed by the end of the college course. Students specializing in mathematics are also advised to elect some work in logic and psychology, descriptive geometry and drawing, astronomy, and a full year's work in physics. Such students are also advised to acquire early in their course a reading knowledge of French and German. Usually for this purpose French 1 and 2 and German 1–4 are sufficient. Italian 1 and 2 will also be of great help.

Students who are preparing to become teachers of mathematics in high schools and academies should at least complete courses 1–8 and course 18. This is the minimum requirement for the recommendation of the department. But those aiming at real proficiency in mathematical teaching should take all the courses open to undergraduates.

COURSES FOR UNDERGRADUATES ONLY.

1.—Solid Geometry. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. The usual theorems and constructions of standard text-books and applications to the mensuration of surfaces and solids. Wentworth's Solid Geometry. Open to all students who do not offer solid geometry for entrance. Assistant Professor Ashton.

2.—College Algebra. Three hours, both terms, Monday, Wednesday, and Friday—1st term, at 8, 9, 10:15, 11:15, 2:30, and 3:30; 2d term, at 8 and 3:30. Rapid review of exponents, radicals, and quadratic equations; graphical representation; complex numbers; logarithms; determinants; theory of equations; numerical equations of higher degree. Wentworth's College Algebra, revised edition. Open to all students of the College. Professor Miller, Associate Professor Newson, Assistant Professor Van der Vries, Assistant Professor Ashton, Mr. Shirk, and Mr. ———

3.—Plane Trigonometry. Two hours, both terms, Tuesday and Thursday—1st term, at 8, 9, 10:15, 11:15, 2:30, and 3:30; 2d term, at 8 and 3:30. The six trigonometric functions; principal formulas of plane trigonometry; solution of triangles and practical problems. Miller's Trigonometry. Open to all students of the College. May be taken at the same time with course 1 or 2. Professor Miller, Associate Professor Newson, Assistant Professor Van der Vries, Assistant Professor Ashton, Mr. Shirk, and Mr. ———

4.—Analytic Geometry I. Two hours, both terms, Tuesday and Thursday—1st term, at 9 and 2:30; 2d term, at 8, 9, 10:15, and 3:30. The straight line and circle; loci problems. Ashton's Analytic Geometry. Open to all students who have completed courses 2 and

3. Professor Miller, Associate Professor Newson, Assistant Professor Van der Vries, Assistant Professor Ashton, and Mr. Shirk.

5.—Calculus I. Three hours, both terms, Monday, Wednesday, and Friday—1st term, at 9 and 2:30; 2d term, at 8, 9, 10:15, and 3:30. Differential calculus; fundamental principles; derivatives; applications to geometry and mechanics; maxima and minima; indeterminates; series. Granville's Calculus. Open to students who have completed or are taking course 4. Professor Miller, Associate Professor Newson, Assistant Professor Van der Vries, Assistant Professor Ashton, and Mr. Shirk.

6.—Analytic Geometry II. Two hours, Tuesday and Thursday—1st term, at 10:15 and 1:30; 2d term, at 9 and 2:30. Conic sections; higher plane curves; solid analytics. Ashton's Analytic Geometry. Open to students who have completed course 4. Professor Miller, Associate Professor Newson, Assistant Professor Van der Vries, and Assistant Professor Ashton.

7.—Calculus II. Three hours, Monday, Wednesday, and Friday—1st term, at 10:15 and 1:30; 2d term, at 9 and 2:30. Integral calculus; integration; definite integrals; application to lengths, areas, and volumes. Granville's Calculus. Open to students who have completed course 5; may be taken at the same time with course 6. Professor Miller, Associate Professor Newson, Assistant Professor Van der Vries, and Assistant Professor Ashton.

8.—Calculus III. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. A continuation of courses 5 and 7; application of calculus to problems in fluid pressure; centers of gravity; moments of inertia; etc. Granville's Calculus completed. Open to students who have completed course 7. Assistant Professor Ashton.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

9.—Spherical Trigonometry. Two hours, 2d term, Tuesday and Thursday, at 11. Principal formulas; solution of spherical triangles; applications to navigation and astronomy. Open to students who have completed courses 2 and 3. Miller's Trigonometry. Professor Miller.

10.—Higher Algebra. Two hours, 1st term, Tuesday and Thursday, at 1:30. Permutations and combinations; determinants; theory of limits; infinite series; continued fractions. Open to students who have completed the undergraduate courses. Assistant Professor Ashton.

11.—Theory of Equations. Two hours, 2d term, Monday, Wednesday, and Friday, at 9. General properties and transforma-

tion of equations; algebraic solutions of the cubic and quartic; Sturm's theorem; numerical solution of algebraic and transcendental equations. Open to students who have completed the undergraduate courses. Assistant Professor Van der Vries.

12.—Differential Equations. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. Methods of solving ordinary and partial differential equations; applications to geometry and physics. Open to students who have completed the undergraduate courses. Professor Miller.

13.—Analytic Mechanics. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. Geometry of motion; kinematics; statics; dynamics of a particle and of a rigid body. Open to students who have completed the undergraduate courses. Associate Professor Newson.

14.—Solid Analytic Geometry. Two hours, 1st term, Tuesday and Thursday, at 11:15. Analytic geometry of planes, lines, spheres, and quadric surfaces. Open to students who have completed the undergraduate courses. Assistant Professor Van der Vries.

15.—Advanced Analytic Geometry. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. Point and line coordinates; poles and polars; reciprocal polars; projection. Open to students who have completed the undergraduate courses. Assistant Professor Ashton.

16.—Advanced Calculus. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. Partial differentiation and integration; definite integrals; elliptic integrals; double and multiple integrals; Green's theorem; series. Open to students who have completed the undergraduate courses. Associate Professor Newson.

17.—Complex Numbers. Two hours, 1st term, Tuesday and Thursday, at 10:15. Analytic and geometric properties of complex numbers; condition of functionality; circular transformations, applications. Open to students who have completed the undergraduate courses. Associate Professor Newson.

18.—Teachers' Course. Two hours, 2d term, Tuesday and Thursday, at 10:15. Designed for teachers and students preparing to become teachers of mathematics. It embraces the history, pedagogy and mutual relations of the mathematical subjects usually taught in the public schools from the beginning of the seventh grade to the end of the high-school course. This course consists of (1) history of mathematics, reading, and lectures; (2) a comparative study of the mathematical curricula of the schools of this country

and of Europe; (3) discussions on the best methods of presenting the topics; (4) practice teaching. Open to students who have completed the undergraduate courses. Professor Newson.

COURSES FOR GRADUATES ONLY.

19.—Quaternions (theory and application). Three hours, by appointment. Professor Miller.

20.—Projective Geometry. Geometry of the projective group in the plane and in space; analytic and synthetic methods; applications to non-Euclidian geometry. By appointment. Professor Newson.

21.—Advanced Analytic Geometry and Higher-plane Curves. General methods; cubics and quartics; general theory of algebraic curves. By appointment. Assistant Professor Van der Vries.

22.—Theory of Functions of a Complex Variable. Theories of Cauchy, Weierstrass, and Riemann; integration; conformal representation; algebraic functions and their integrals. By appointment. Assistant Professor Ashton.

23.—Galois's Theory of Equations. The application of the method of groups to the study of algebraic equations. By appointment. Assistant Professor Ashton.

24.—Theory of Transformation Groups. An analytic and synthetic treatment of various transformations of space, emphasizing the notion of a group of transformations. The groups of collineations, conformal transformations, motions and contact transformations are considered. By appointment. Associate Professor Newson.

25.—Theory of Surfaces and Twisted Curves. Properties of surfaces of the third and fourth orders, and of certain other general classes of surfaces; also properties of twisted curves of the third and fourth orders. By appointment. Assistant Professor Van der Vries.

## *Astronomy.*

COURSES FOR UNDERGRADUATES ONLY.

These courses are open to Juniors and Seniors of the College.

1.—Descriptive Astronomy. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. Lectures and recitations, with occasional evenings for observation. Text-book, Comstock's Astronomy. Professor Miller.

2.—Practical Astronomy. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. Theory of least squares. Use of a sextant and transit instrument, determination of time, latitude and longitude, etc. Text-book, Doolittle's Practical Astronomy. Professor Miller.

COURSE FOR ADVANCED UNDERGRADUATES AND GRADUATES.

3.—Celestial Mechanics. Three hours. Text-book, Moulton's Celestial Mechanics. By appointment. Professor Miller.

## MINERALOGY.

(See Geology.)

## MUSIC.

*Harmony and Musical Analysis.*

Courses 1 to 3 are open to Graduate students and Juniors and Seniors, the work counting as one full course. These courses are subject to the schedule of fees in the Fine Arts department. Course 4 is open to all students without fee.

1.—Harmony. Two hours, both terms, Tuesday and Thursday, at 2:30. The study of overtones, scales, intervals, the formation and connection of triads and seventh chords with their inversions; close and open harmony; the harmonization of melodies and basses and of original melodies. Practical work at the piano. Chadwick's Harmony used. Professor Skilton.

2.—Harmony. Two hours, 1st term, Tuesday and Thursday, at 3:30. The study of modulations and the inharmonic material of music. Chadwick's Harmony used. Open only to those who have completed course 1. Professor Skilton.

3.—Musical Analysis. Two hours, 2d term, Tuesday and Thursday, at 3:30. The simple homophonic forms, the phrase, section, period, two-part song, three-part song, song with trio. Composition of such forms. Open only to those who have completed courses 1 and 2. Professor Skilton.

4.—Musical Appreciation. One hour, 1st term, Monday, at 2:30. A course for those who wish to learn to understand music as listeners, without necessarily learning to perform. The different styles of music are explained and illustrated with special reference to the University concerts. Professor Skilton.

## PHARMACY.

Professor Sayre.
Mr. Emerson.

### EQUIPMENT.

(See equipment, under School of Pharmacy.)

### COURSES FOR ADVANCED UNDERGRADUATES.

1.—Physiological and Medical Chemistry. Four hours, 1st term, 3:30 to 5:30. This course is offered to meet the requirements of medical students. Products of physiological interest are separated from animal tissues and organs and studied in detail. Special attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second part of the course consists of five weeks of urinalysis, embracing lectures, recitations, and work in both chemical and microscopical laboratories. Professor Sayre and Mr. Emerson.

2.—Advanced Work in Physiological Chemistry. Analysis of dietetics used in medicine, quantitative valuation of proximate constituents of foods, assay of digestive ferments, and the separation of organic principles of animal tissues, etc. Professor Sayre and Mr. Emerson.

## PHILOSOPHY.

Professor Templin.
Professor Boodin.
Assistant Professor Hogg.
Mr. ——, Fellow.

### EQUIPMENT.

The philosophical library contains about 1400 volumes, including complete sets of the leading philosophical and psychological periodicals published in the English, German and French languages. These are all available for students working in the department, and are kept in a special departmental reading-room of the general library.

The work in experimental psychology is carried on in a laboratory of three rooms and a dark room. These are equipped with gas, water, and electric currents, direct and alternating, and a considerable supply of apparatus of various kinds, such as is used in modern psychological laboratories. A shop arranged for work in wood, metal and glass enables the instructor and student to improvise many pieces of apparatus not already provided.

### COURSES FOR UNDERGRADUATES ONLY.

1.—Elements of Psychology. Given each term. Three hours, Monday, Wednesday, and Friday, at 9. A general study of mental processes and their laws. Lectures, text-book, and reports, together

with laboratory work. James's Psychology is used as a text. Three hours a week of laboratory work are required. This serves to illustrate the principles of psychology and furnishes training in psychological observation. This course is required for admission to all of the following courses in the department except course 2, which may be taken at the same time. Open to Sophomores, Juniors, and Seniors. Professor Boodin and Assistant Professor Hogg.

2.—Introduction to Philosophy. Two hours, both terms, Tuesday and Thursday, at 9. A general survey of the methods, aims and results of the various natural sciences, their relations to each other, and their ultimate significance. The course thus serves as an elementary introduction to philosophy. Lectures and assigned readings. Should be preceded by elementary courses in the biological sciences and physical sciences. Open to all students in the College who have completed or are taking course 1. Professor Templin.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

3.—Experimental Psychology. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. A laboratory course following the laboratory work of course 1. Additional work in sensation is first given, followed by a study of the processes of perception, attention, affection, and association. Titchener's Experimental Psychology Laboratory Manual is used as a text. Assistant Professor Hogg.

4.—Genetic Psychology. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. An attempt at a broad study of the genesis and growth of mental life in the individual. Open to Juniors and Seniors who have had course 1. Assistant Professor Hogg.

5.—Educational Psychology. Three hours, 1st term, Tuesday and Thursday, at 9. This course will consist of a deeper study of the general principles of psychology as involved in attention, association, memory, and apperception, considered with special reference to the work of the teacher. Lectures, assigned readings in standard authors, and reports, together with laboratory work. The latter will occupy two hours a week and will supplement the work of the classroom. The time for the laboratory will be arranged according to the convenience of instructor and student. Professor Boodin and Assistant Professor Hogg.

6.—Social Psychology. Two hours, 2d term, Tuesday and Thursday, at 9. The study of the social consciousness as involved in the genesis and growth of social institutions, the psychology of the crowd and of religion. The work is based upon the writings of

Adam Smith, Baldwin, Tarde, James, Starbuck, Coe, etc. Professor Boodin.

7.—Logic, Deductive and Inductive. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. A text-book course, based on Welton's Manual of Logic. Emphasis is placed on the theory of induction. Open to Juniors and Seniors who have had course 1. Assistant Professor Hogg.

8.—History of Philosophy. Three hours, 1st term, Monday, Wednesday, and Friday, at 8. This course outlines the principal movements or tendencies in the history of thought, beginning with the Greek thinkers. In the study of Greek philosophy especially, the attempt is to show how the philosphical problems became differentiated from the other problems of thought, such as the religious and scientific. Throughout the course careful attention is paid to the relation of the philosophical movements to the movements of history in general. The work is conducted by lectures, assigned readings in a text, in the standard histories, and in the authors themselves. Professor Boodin.

9.—History of Philosophy. Three hours, 2d term, Monday, Wednesday, and Friday, at 8. A continuation of course 7. Open to students who have had course 8 and to others only on special permission of the instructor. Professor Boodin.

10.—Philosophical Classics. Two hours, 1st term, Tuesday and Thursday, at 8. This course furnishes an opportunity for a first-hand and systematic study of some of the more important works and movements in the history of philosophy. The authors taken up will vary with succeeding terms. The course may be pursued together with or following the work in history of philosophy but not independently of it. To accommodate students desiring to carry both these subjects, they are offered at the same hour but on alternate days. Professor Boodin.

11.—Philosophical Classics. Two hours, 2d term, Tuesday and Thursday, at 8. A continuation of course 10. Professor Boodin.

12.—Introduction to Metaphysics. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. This course first of all outlines the problems of philosophy proper according to their development in the history of thought. It further aims to acquaint the student with the dominant tendencies of present-day thinking, with a view to making him more conscious of his own meaning. As in the following course, the aim is to be constructive and not merely analytic. Lectures, with reading and discussion of some of the important authors of modern idealism. Professor Boodin.

13.—Introduction to the Philosophy of Religion. Three

hours, 2d term, Monday, Wednesday, and Friday, at 11:15. This course takes up some of the fundamental religious concepts from a philosophical point of view, such as the nature of religion comparatively studied, the conception of God, the problem of evil, the problem of immortality, the place or distinctive contribution of Christianity in history, etc. The work will be conducted by lectures, with discussion of the more important recent contributions, such as those of Royce, James, the Cairds, and C. C. Everett. The applicants for the course should have completed the courses in history of philosophy and metaphysics or such other preparation as the instructor may deem sufficient. Professor Boodin.

14.—Systematic Ethics. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. This course undertakes a critical examination into the psychological foundations of human conduct, a review of the historic ethical theories, and the development of a satisfactory system of ethics. This program includes a study of the following subjects: The emotions, conscience, and will; the Hellenic, Christian, mediæval and modern conceptions of life; hedonism, utilitarianism, socialism, formalism, asceticism, and idealism; responsibility and freedom, duty, right, and virtue, benevolence and justice, guilt and redemption, progress and perfection. The course should be preceded by as many of the foregoing courses as possible, but must be preceded by course 1. Professor Templin.

15.—Practical Ethics. Two hours, 2d term, Monday and Wednesday, at 9. The application of theoretical principles of conduct to practical problems of life. Following are some of the subjects that will be discussed: Childhood and its problems; the family and the home; the school, the press, the state, and the church; the production, distribution and use of property; professional life, temperance, fashion, and luxury; citizenship, government, and punishment; science, literature, art, culture, and religion. Must be preceded by course 14. Professor Templin.

16.—Esthetics. Two hours, 2d term, Tuesday and Thursday, at 8. A historical and constructive treatment of the problem of the beautiful, followed by an application of esthetic theory to nature and the fine arts. Lectures, discussions, and assigned readings. Professor Templin.

## PHYSICAL EDUCATION.

Associate Professor NAISMITH.
Miss FISH.
Mr. PLANK.

Until the completion of the new gymnasium, classes will be held in the basement of Snow Hall, which, while inadequate to the needs of the University, affords opportunity for regular exercise. The main floor is eighty-six feet long by thirty-six wide. The equipment consists of light and heavy apparatus, such as clubs, wands, dumb-bells, foils, horses, parallel bars, vaulting and horizontal bars, rowing machines, and pulley weights. A room is set apart for special development, and there are facilities for most of the indoor games. Baths and lockers are provided in separate rooms.

### ADVICE AS TO CHOICE OF COURSES.

Courses 6, 7, 8, 9 and 10 are designed for those who intend to teach this subject.

Course 12 is designed for teachers; to give them such a knowledge of the growth and development of the child that they will be able to care for the health of the pupil and to arrange his studies to suit his development.

Courses 11 and 12 are arranged with reference to the course in domestic science.

### COURSES FOR UNDERGRADUATES ONLY.

1.—HYGIENE. One hour, 1st term. Lectures designed to help the students to maintain health, dealing with food, clothing, exercise, conditions conducive to study, prophylactic treatment, especially in regard to infectious and contagious diseases. Required of Freshmen.

2.—MARCHING. One hour, 1st term. Elementary work in free-hand, dumb-bells, wands, and clubs; hygienic work on the apparatus; sprinting, jumping; gymnastic games for recreation. Required of Freshmen.

3.—ADVANCED WORK IN FREE HAND. Two hours, 2d term. Calisthenics; and hygienic work on the apparatus; athletics of an all-round nature; games for skill and physical judgment. Required of Freshmen.

4.—EDUCATIONAL WORK WITH LIGHT AND HEAVY APPARATUS. One hour, 1st term. Fencing and broadsword; games requiring skill and self-control; squad-leading in calisthenics and apparatus work. Required of Sophomores.

5.—SPECIALIZING IN SOME LINE OF EXERCISE. One hour, 2d

term. Boxing and wrestling; conducting games, competitions, and exhibitions. Required of Sophomores.

6.—Leaders' Class. Two hours, by appointment. Analysis of gymnastic movements; invention of drills and combination of exercises; conducting classes; the use of safety methods and apparatus. Open to Juniors and Seniors.

Those physically qualified may elect the following in their season, in place of the foregoing: Football, baseball, tennis, basket-ball, track and field athletics, hockey, and lacrosse. This work must be under the appointed coach or leader, in order to obtain credit.

Additional courses will be arranged for special work, and prescribed work which cannot be done in class.

Every student may receive a thorough medical and physical examination, with the results platted on a chart. Where needed, special exercise will be prescribed.

Every student using the gymnasium or who is a candidate for any University team must pass a satisfactory medical and physical examination.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

7.—Mechanical Anatomy. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. The study of the bones, articulations and muscles in their relations as mechanical principles. The location of the viscera. The distribution of the principal nerves and blood-vessels, and the topography of the muscles. Open to Juniors and Seniors. Associate Professor Naismith.

8.—The Principles of Athletic Sports and Games. Two hours, 1st term, Tuesday and Thursday, at 9. The analysis of the different athletic events, method of teaching, the relation of the various games, the physique and mental power that is required in and developed by the different sports. Associate Professor Naismith.

9.—Physical Education. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. Dealing with the effects of exercise on the various systems of the body; history of the subject; prescription of exercise, and mechanical therapeutics. Associate Professor Naismith.

10.—Physical Diagnosis. Two hours, 2d term, Tuesday and Thursday, at 9. Medical, physical and functional examinations; anthropometry and its applications. Associate Professor Naismith.

11.—Physical Education of Children. Three hours, 2d term, Monday, Wednesday, and Friday, at 8. Including the growth of the child and conditions that affect its development; effect of physical, mental and emotional strain. Relation of physical condition to the

development of character and mental ability; methods of obtaining the best results. Associate Professor Naismith.

12.—Development of School Children. Two hours, 2d term, Tuesday and Thursday, at 8. Study of the normal periods of adolescence; the development of the nerve centers; tendencies to abnormalities; signs of incipient illness; signs of fatigue and strain; the examination of children for hindrances to study and development. Associate Professor Naismith.

## PHYSICS.

Professor Blake.
Assistant Professor Rice.
Mr. Stimpson.

### EQUIPMENT.

For lecture purposes there is a large lecture-room supplied with water, gas, and both direct and alternating currents. The apparatus available is sufficient to illustrate all the ordinary experiments usually given in a year's course in college physics and to show some of the more advanced experiments.

There are three large general laboratory rooms and seven smaller rooms for special work, each supplied with water, gas and several electrical power circuits. The apparatus for general physics is sufficient to enable each student to perform all the experiments usually described in manuals of college physics. For advanced work the equipment includes a number of pieces of fine apparatus in heat, light, and electricity; and there is regularly employed a mechanician, who is constantly making auxiliary apparatus and occasionally more complicated special pieces. The entire equipment is being increased as rapidly as possible.

The departmental library contains the more important English, French and German periodicals, with bound volumes for twenty or thirty years. These include the Philosophical Transactions of the Royal Society, the Philosophical Magazine, the Journal de Physique, Drude's Annalen and Beiblätter, and others. There is also included a good number of the standard treatises and of more elementary works for the general student.

### ADVICE AS TO CHOICE OF COURSES.

Courses 7 to 13 are open to Juniors and Seniors of the College who have had the necessary preparation. Courses 1, 2, 3, 4, 5 and 6 are open to all students of the College. Courses 9 to 13 are open to graduate students.

Courses 10, 11, 12 and 13 may be extended beyond one term, with approval of the instructor.

COURSES FOR UNDERGRADUATES ONLY.

1.—Elementary Physics. Three hours, 1st term, Monday, Wednesday, and Friday, 10:15 to 12:15. Recitations and laboratory. Open to students of the College who do not offer physics for entrance and who have completed entrance algebra and plane geometry. Assistant Professor Rice.

2.—Elementary Physics Two hours, 2d term, Tuesday and Thursday, 10:15 to 12:15. A continuation of the preceding course. Open to students who have completed course 1. Assistant Professor Rice.

3.—General Physics. Two hours, 1st term, Tuesday and Thursday, at 9. Experimental lectures and recitations. Open to students of the College who have had courses 1 and 2, or their equivalent, and plane trigonometry. Assistant Professor Rice.

4.—General Physics. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. A continuation of course 3. Open to students of the College who have had course 3. Assistant Professor Rice.

5.—Physical Measurements and Methods. Three hours, 1st term, Monday, Wednesday, and Friday, 1:30 to 3:30. A laboratory course, open to students who have completed courses 1, 2, and plane trigonometry. Assistant Professor Rice.

6.—Physical Measurements and Methods. Two hours, 2d term, Tuesday and Thursday, 1:30 to 3:30. A continuation of course 5. Open to students who have completed course 5. Assistant Professor Rice.

7.—Mechanics, Sound, and Heat. Five hours, 1st term, Monday, Tuesday, Wednesday, and Thursday, at 11:15, and one laboratory period. A fundamental course of experimental lectures and recitations. Open to Juniors and Seniors who have had plane trigonometry and analytical geometry. Professor Blake and Mr. Stimpson.

8.—Electricty, Magnetism, and Light. Five hours, 2d term, Monday, Tuesday, Wednesday, and Thursday, at 11:15, and one laboratory period. Continuation of physics 7. Open to Juniors and Seniors who have had plane trigonometry, analytics, and calculus. Professor Blake and Mr. Stimpson.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

9.—An Introduction to Mathematical Physics. Either term, by appointment. A theoretical course in general principles. Open to Juniors and Seniors and Graduates who have had physics 7 and 8,

or physics 3, 4, and 5, 6. A ready, working knowledge of calculus is necessary. Professor Blake or Assistant Professor Rice.

Courses 10, 11, 12 and 13 consist of more specialized study of the subjects of 9, embracing both mathematical and experimental presentations. Open to Juniors, Seniors and Graduates who have had calculus, physics 3, 4, and 5, 6, or 7 and 8.

10.—KINEMATICS AND DYNAMICS. Properties of matter. Either term, by appointment. Professor Blake or Assistant Professor Rice.

11.—ACOUSTICS AND THERMICS. Either term, by appointment. Professor Blake or Assistant Professor Rice.

12.—OPTICS. Either term, by appointment. Professor Blake or Assistant Professor Rice.

13.—ELECTRICS.—Either term, by appointment. Professor Blake or Assistant Professor Rice.

## PHYSIOLOGY.

Associate Professor HYDE.
Demonstrator, Associate Professor Hoxie.

### EQUIPMENT.

The physiological department is thoroughly equipped with approved, modern apparatus for demonstration and experimental work. Besides a large lecture-room that seats 100 students, it possesses a department library for the use of the students which contains the latest reference books and all of the best physiological journals. There is a large laboratory for the students of the College that contains tables particularly designed for their work. In this laboratory are, besides the needed instruments, digesters, spirometers, kymographs, manometers, and all kinds of electrical apparatus, a skeleton, and a finest French manikin.

The research-room is fitted up with necessary tables, instruments and electrical apparatus for any kind of physiological experiments. There is also a large preparation room, where most of the material is prepared, and a storeroom.

### ADVICE AS TO CHOICE OF COURSES.

Course 1 is recommended especially to general students and to those who intend to specialize in domestic science.

Course 2 is designed for students who are preparing to teach.

1. PHYSIOLOGY.—Five hours, 1st term, daily, at 1:30. A general course, especially designed to be introductory to the more advanced work in domestic science. The first half of the course is devoted to a study of the structure and functions of the human body,

by means of lectures, recitations, demonstrations, and laboratory experiments. The second half consists of the study of the elements of hygiene and applied therapeutics, with special reference to home life. Open to Sophomores. Associate Professor Hyde and Associate Professor Hoxie.

2.—PHYSIOLOGY. Five hours, 2d term, Monday, Wednesday, and Friday, at 11:15; Tuesday and Thursday, at 10:15. Lectures, demonstrations, and laboratory work. A general course in physiology, designed for those who intend to specialize in the sciences. Open to students of the College who have taken chemistry 1. Associate Professor Hyde. (Not given in 1905–'06.)

COURSES FOR ADVANCED UNDERGRADUATES.

3.—PHYSIOLOGY. Five hours, 2d term, Monday, Wednesday, and Friday, at 11:15; and Tuesday and Thursday, 10:15 to 12:15. Open to Juniors and Seniors in the College. Lectures, recitations, demonstrations, and laboratory work, based on Martin's Human Body, Advanced Course. Associate Professor Hyde. (Not given in 1905–'06.)

4.—PHYSIOLOGY. Five hours. Investigation of special subjects. Open to Juniors and Seniors who have completed physiology 3. Either or both terms, by appointment. Associate Professor Hyde.

COURSE FOR GRADUATES ONLY.

5.—PHYSIOLOGY. Experimental physiology and original research. Open to Juniors and Seniors who have taken not less than a year of anatomy and physiology, and have given evidence that they are prepared for it. Either or both terms, by appointment. Associate Professor Hyde.

## PSYCHOLOGY.

(See Philosophy.)

## PUBLIC SPEAKING AND DEBATE.

Assistant Professor FRAZIER.

EQUIPMENT.

Students in this department will find in the library the collected orations of the leading American orators from the early colonial period to the present time, all of the better-known English orators, and specimens of the oratory of Greece, Rome, and modern France and Germany. In addition, there is a fairly complete list of the early and the more recent writers who deal with the theory of the subject. The students in debate have access to the economic, history and sociology seminary rooms in Spooner Library.

ADVICE AS TO CHOICE OF COURSES.

Work in this department is arranged to meet the needs of two classes of students: (1) Those who wish merely a preliminary training in public speaking and reading; and (2) those who wish to specialize to some extent in this subject. Students of class 1 should elect courses 1 and 2 during the Freshman or Sophomore years, and, if possible, either course 7 or 8 during the Junior or Senior years. Students of class 2 should elect their courses in catalogue order, and consult with the instructor as to collateral courses to be pursued. All students contemplating taking work in this department are urged to join one of the literary societies of the University, as supplementary to the classroom work.

COURSES FOR UNDERGRADUATES.

1.—Principles of Spoken Discourse. Three hours, both terms—Monday, Wednesday, and Friday, 1st term, at 1:30; second term, at 1:30 and 2:30. Open to all students of the College. A course designed to be introductory and general, rather than technical. Training in the principles of good reading, in the analysis and delivery of famous speeches, and in the construction and oral presentation of original speeches. Drill in speaking from outline and in the use of the manuscript. Lectures and required library reading. The enrolment in any section of this course is limited to twelve students. Assistant Professor Frazier.

2.—Arguments and Debates. Two hours, both terms, Tuesday and Thursday, at 1:30. A course open only to students of the Freshmen or Sophomore classes. The work will consist of regular classroom debates conducted by affirmative and negative debating teams. The more simple questions will be chosen. Each side will submit its brief and write a forensic covering the argument of each debate. Should be preceded by course 1, although this is not necessary. Assistant Professor Frazier.

3.—Oral Debates. Three hours, 1st term, Monday, Wednesday, and Friday, at 3:30. The object of this course is to give the student preliminary training in debate. The fundamental principles of debating will be discussed in detail; lectures will be given on the collecting and arranging of material. There will be weekly debates by the members of the class. Open to Juniors and Seniors who have had public speaking 1 and rhetoric 4. Assistant Professor Frazier.

4.—Oral Debates. Two hours, 1st or 2d term, Tuesday and Thurday, at 3:30. Advanced course. A thorough investigation of a limited number of subjects taken from the field of political economy,

sociology, and history. Conferences, classroom discussion, and criticism. Open to Juniors and Seniors who have had public speaking 1 and 2. Assistant Professor Frazier.

5.—Expository Addresses. Two hours, 2d term, Tuesday and Thursday, at 2:30. A study of the form and requirements of the expository address. The subject-matter for the speeches in this course will be chosen exclusively from economic subjects. Open to Juniors and Seniors who have had public speaking 1 and economics 1. Assistant Professor Frazier.

6.—Reading Aloud. Two hours, 1st term, Tuesday and Thursday, at 2:30. The aim of this course is to give the student suggestions and helps which will enable him to read aloud intelligently, simply, and with appreciation. There will be lectures and classroom drill. Open to Juniors and Seniors. Assistant Professor Frazier.

7.—Forms of Public Address. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. The study and practice of the forms of demonstrative oratory—the eulogy, the after-dinner speech, political oratory, anniversary and commemorative addresses, nominating speeches, responses, and platform addresses. Library work covering the literature of the subject. Open to Juniors and Seniors. Assistant Professor Frazier.

8.—Extempore Speaking. Three hours, 2d term, Monday, Wednesday, and Friday, at 3:30. The object of this course is to train the student to speak on his feet. Special attention will be given, in the first place, to the construction of the speech, to the gathering and outlining of the material; and, in the second place, to the natural and effective delivery of the material thus arranged. Open to Juniors and Seniors. Assistant Professor Frazier.

## ROMANCE LANGUAGES AND LITERATURES.

Professor Galloo.
Assistant Professor Lincoln.
Assistant Professor Bassett.
Assistant Professor Le Duc.
Miss Stanton, Fellow.

### EQUIPMENT.

The department of Romance languages and literatures possesses a collection of illustrative material consisting of several hundred photographs, stereopticon slides, maps, plans, plaster casts, etc., representing historical features of French life, in costume, architecture, etc., as well as persons, places and things that have a closer and more definite relation to literature or to special literary works.

The library of this department contains 2628 volumes, and receives ten French and two Spanish periodicals.

### *French.*

ADVICE AS TO CHOICE OF COURSES.

The first eight courses must be taken in the order given below. Upon completion of these, students whose aim is to gain accuracy and ease in writing and speaking French and a thorough knowledge of the grammar are advised to select courses 9 and 10. Advanced students should also take German as a collateral study.

Students of French literature should begin with couress 16 and 17. Students in the literature courses are recommended to take mediæval and modern European history.

Those especially interested in the linguistic study of French should take courses 19 to 21, inclusive, which, with courses 22 to 25, are open only to advanced students. Students in linguistics should have a good reading knowledge of Latin as a basis.

A reading knowledge of Spanish and Italian should precede graduate study in this department.

The head of the department will, on application, outline a course for students intending to specialize in or teach French.

COURSES FOR UNDERGRADUATES ONLY.

1.—Elementary French I. Grammar (Fraser and Squair) and easy reading. Five hours, 1st term, daily, at 8, 9, 10:15, 11:15, or 1:30. Also given in the 2d term, five hours, daily, at 11. Drill in pronunciation and forms. Open to all students who have had three years of Latin or three years of German. Professor Galloo, Assistant Professor Lincoln, Assistant Professor Bassett, Assistant Professor Le Duc. Or,

2.—Elementary French II. Five hours, 2d term, daily, at 8, 9, 10:15, 11:15, or 1:30. Also given in the 1st term, five hours, daily, at 9. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition. Professor Galloo, Assistant Professor Bassett, Assistant Professor Lincoln, Assistant Professor Le Duc.

3.—Modern French Prose. Three hours, both terms—1st term, Monday, Wednesday, and Friday, at 9 or 10:15; 2d term, Monday, Wednesday, and Friday, at 10:15. Translation and reading of some works of Mérimée, George Sand, Anatole France, and René Bazin. Assistant Professor Lincoln or Assistant Professor Le Duc.

4.—Composition.—Two hours, both terms, Tuesday and Thursday, at 10:15. Written exercises intended chiefly as a grammatical review. Oral exercises. Dictation. Assistant Professor Le Duc or ———.

5.—French Prose and Poetry.—Three hours, 2d term, Monday, Wednesday, and Friday, at 9 or 10:15. Reading of representative works of the seventeenth, eighteenth and nineteenth centuries. Assistant Professor Le Duc or Assistant Professor ———.

6.—Corneille and Racine. Two hours, 2d term, Tuesday and Thursday, at 9:30. Reading of four or five of their greatest tragedies. Assistant Professor Lincoln.

7.—Moliere. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Careful study of the more important plays, rapid reading of the others; reports in French by members of the class. Prerequisites: Two courses chosen from 3, 5, or 6. Professor Galloo.

8.—Composition and Conversation. Two hours, 1st term, Tuesday and Thursday, at 11:15. Practice in writing and speaking French. Must be preceded by course 4. Assistant Professor ———.

9.—Advanced Composition. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. Translation, original composition, and practice in speaking French. Must be preceded by course 8. Assistant Professor Le Duc.

10.—Teachers' Course. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. Systematic review of the grammar from the point of view of the requirements of elementary instruction. Outlines of historical grammar. Study of methods of teaching languages and practice in teaching. Must be preceded by courses 4 and 8. Professor Galloo.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

11.—French Literature of the Sixteenth Century. Two hours, 2d term, by appointment. The Renaissance in French literature. The Pléiade. The beginnings of French Classicism. Professor Galloo.

12.—French Literature of the Seventeenth Century. Two hours, 2d term, by appointment. A study of the development of French literature from the Renaissance to the end of the reign of Louis XIV. Professor Galloo.

13.—French Literature of the Eighteenth Century. Two hours, 2d term, by appointment. Special attention is paid to the life and works of Voltaire; study of Montesquieu, Rousseau, and the Encyclopedists; the dramatists. Professor Galloo.

14.—The Romantic School (1800–1835). Three hours, 1st term, Monday, Wednesday, and Friday, at 9. A study of the rise of Romanticism in France and of its characteristic products in poetry

and the drama. Lamartine, A. de Vigny, and A. de Musset. Professor Galloo.

15.—The Romantic School (1800–1835). Two hours, 2d term, Tuesday and Thursday, at 9. This is a continuation of course 14, and will be devoted especially to Victor Hugo's works. Professor Galloo.

16.—Development of the French Novel. Two hours, 1st term, Tuesday and Thursday, at 9. A survey of the novel in the seventeenth and eighteenth centuries. Professor Galloo.

17.—Development of the French Novel. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. The novel in the nineteenth century, with special reference to the origin and growth of realism and naturalism. Professor Galloo.

18.—History of Early French Literature. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. From the earliest times to the classic period. Lectures, recitations, and private readings. Professor Galloo.

19.—History of Modern French Literature. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. From the classic period to the present day. Lectures, recitations, and private readings. Professor Galloo.

20.—The French Drama. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. A study of the development of the theater in France from the origin to the period of Augier and Dumas fils. Lectures, recitations, and written reports. Assistant Professor Lincoln.

21.—History of the French Language. Three hours, 1st term, by appointment. Its rise from low Latin. The additions from other sources; its growth and modifications. Professor Galloo.

22.—Old French. Two hours, 2d term, by appointment. An introduction to French philology. Chrestomathie du Moyen âge (Paris et Langlois) or Chrestomathie de l'ancien français (Constans). Professor Galloo.

23.—Old French. Two hours, 1st term, by appointment. A continuation of course 22. Reading of the Extraits de la Chanson de Roland (Gaston, Paris), with special attention to the phonetic changes and the inflections. Professor Galloo.

COURSES FOR GRADUATES ONLY.

24.—Old French. Three hours, 1st term. Phonology and morphology of old French, with some discussion of syntax. Le Pèlerinage de Charlemagne à Jérusalem; Aucassin et Nicolete.

Must be preceded by courses 20 and 21 or their equivalents. Professor Galloo.

25.—Provencal. Two hours, 1st term, by appointment. Grandgent's Provençal Phonology and Morphology and Bartsch's Chrestomathie Provençale. Assistant Professor Lincoln.

26.—Mediæval French Literature. Three hours, 2d term, by appointment. From the first literary monuments to the renaissance. Professor Galloo.

27.—Moliere. Three hours, 1st term, by appointment. Same course as 7, with additional requirements. Study of Molière; his life and surroundings; his plays—their sources and influence. One or more essays will be written, preferably in French. Professor Galloo.

### *Spanish.*

COURSES FOR UNDERGRADUATES ONLY.

Students are advised to take, as preparation, courses 1 and 2 in French.

1.—Elementary Spanish. Five hours, 1st term, daily, at 10:15. An outline of grammar (Ramsey). Doce Cuentos escogidos. Matzke's Reader. Elementary composition. Assistant Professor Bassett.

2.—Continuation of Course 1. Five hours, 2d term, daily, at 10:15. Matzke's Reader. Easy writing continued. Rapid reading, mainly in modern authors: P. A. de Alarcón, Pérez Galdós, Palacio Valdés, Valera. Assistant Professor Bassett.

3.—Cervantes. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. Reading of Don Quixote. Grammar and composition. Assistant Professor Bassett.

4.—The Spanish Classical Drama. Two hours, 2d term, Tuesday and Thursday, at 2:30. Special attention will be devoted to Lope de Vega and Calderón. Assistant Professor Bassett.

### *Italian.*

COURSES FOR UNDERGRADUATES ONLY.

1.—Elementary Italian. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. Pronunciation. Grammar. Assistant Professor Bassett.

2.—Elementary Italian. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. A continuation of course 1. Grammar. Easy composition exercises. Reading from Edmondo de Amicis or Manzoni. Assistant Professor Bassett.

3.—Grammar, Composition, and Reading. Two hours, 1st term,

Tuesday and Thursday, at 1:30. Ariosto's Orlando Furioso. Assistant Professor Bassett.

4.—Grammar, Composition, and Reading. Two hours, 2d term, Tuesday and Thursday, at 1:30. Tasso's Gerusalemme Liberata. Assistant Professor Bassett.

## SANSKRIT.

(See Latin Language and Literature.)

## SPANISH.

(See Romance Languages and Literatures.)

## SOCIOLOGY AND ECONOMICS.

Professor Blackmar.
Assistant Professor Cone.
Assistant Professor Boynton.
Mr. Merwin, Fellow.
Professor John R. Commons.*

### EQUIPMENT.

Instruction in the department of sociology and economics is conducted chiefly by lectures, and reading and investigation in the library, aided in certain courses by text-books. The University library contains about 3000 volumes relating to the courses of instruction. All of the principal magazines treating of the work of the department are on file in the reading-room for the use of the students. In addition there are charts, maps, and outlines. A limited amount of investigation of social conditions is carried on.

### ADVICE AS TO CHOICE OF COURSES.

Courses 1, 2, 3 and 4 lay the foundation of subsequent work in sociology, although it is possible for students who have studied either economics or history to take courses 5, 6, and 7. Courses 1, 2, 3 and 4 are designed to give a general knowledge of the subjects treated. Courses 5, 6 and 7 are for advanced work and are especially designed for those who desire to specialize in sociology.

Courses 8 and 9 are designed for a general survey of anthropology. They are general culture studies but also relate to other courses in sociology.

Economics 1 is an essential foundation to subsequent courses in economics. Economics 2 and 3 lay the foundation for economics 9, 10, 11, and 12. It is very desirable that students should consult with the instructors before choosing a group of studies in the depart-

*Of the University of Wisconsin. Lecturer on Labor Problems.

ment of sociology and economics as there are five more or less distinct lines of work, namely, sociology proper, ethnology, economic theory, economic history, and statistics and finance.

### *Sociology.*

Courses 1 to 10, inclusive, are open to Juniors and Seniors of the College. These courses may also be taken by graduate students, with such additional work as may be required by the instructor.

COURSES FOR GRADUATES AND ADVANCED UNDERGRADUATES.

1.—ELEMENTS OF SOCIOLOGY I. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. This is a general course in the foundations and principles of sociology. It includes the careful survey of social origins, social evolution, social structure, social activities, and social organization. It is a study of the nature of society in its concrete forms from an evolutionary standpoint. Much attention is given to the causes which have produced society. A concrete study of a community is required of each student. Professor Blackmar.

2.—ELEMENTS OF SOCIOLOGY II. Two hours, 2d term, Tuesday, and Thursday, at 1:30. A continuation of course 1. Special attention is given to social ideals and social inequalities; social telesis; methods of sociological investigation; development of sociology. This course should be preceded by course 1. Professor Blackmar.

3.—SOCIAL PATHOLOGY I. Two hours, 1st term, Tuesday and Thursday, at 1:30. A general study of poverty, pauperism, crime, and social degeneracy, and their causes, prevention, and remedy. A study of the causes of epilepsy and insanity. Professor Blackmar.

4.—SOCIAL PATHOLOGY II. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. A continuation of course 3. Administration of charitable and correctional affairs; management of jails, reformatories, penitentiaries, and institutions for defectives and dependents; condition of the slums and rural populations; housing of the poor; defects of social organization and societies. Remedial agencies. Each student is required to visit at least two social institutions and report on the same. This course should be preceded by course 3. Professor Blackmar.

5.—SOCIALIZATION AND SOCIAL CONTROL. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. This course is designed to give a thorough study in pure sociology. It has to do with social forces, social laws, and the origin and development of social control. It involves a study of aggregation, association, and cooperation, as well as social inequalities and methods of overcoming their evil effects. Professor Blackmar.

6.—Psychological Sociology. Two hours, 2d term, Tuesday and Thursday, at 2:30. Origin, development and characteristics of the social mind; psychical activities; psychology of the crowd and the "mob." Professor Blackmar.

7.—Social and Economic Statistics. Two hours, 2d term, Tuesday and Thursday, at 10:15. A practical course in social relation and social problems by the statistical method. Students are instructed in the technique of statistics, and the scope and meaning of statistical inquiry. A practical knowledge is derived from the handling of statistical data and in the construction of statistical tables, tabulations, etc. By the preparation of diagrams, charts, etc., in the laboratory, the graphic method is also introduced. It is aimed to make the course a practical one by the study of such sociological phenomena as populations, vital statistics, birth-rates, marriage-rates, death-rates, divorce, immigration, migration, etc., and in the investigation of such economic subjects as prices, trade and internal commerce, agricultural and manufacturing growth, and such industrial activities as admit of statistical inquiry. Some knowledge of economics and sociology is desirable. Assistant Professor Boynton.

8.—General Anthropology. Three hours, 1st term, Monday, Wednesday, and Friday, at 3:30. The natural history of man. The probable origin and antiquity of man. Comparison with the anthropoid apes. Man's physical, mental and social characterstics. Methods of obtaining food, shelter and distribution over the earth. Evidences of Tertiary man. Relics of man found in the gravel drift, caves, and mounds. The beginnings of art and industry. The division of labor. The origin and development of language. Lectures and library work. Professor Blackmar.

9.—Ethnology. Two hours, 2d term, Tuesday and Thursday, at 3:30. Origin of races and ethnic groups. Racial differentiation and development. Characteristics of ethnic society. Why some ethnic groups survive and others become extinct. The conflict and survival of races. Their geographical distribution. Influence of geographical and physical environment. Comparison of natural and civilized races. Classification of existing races. Modern race problems. Lectures and library work. Professor Blackmar.

10.—The Family. Two hours, 2d half of 2d term, daily, at 2:30. The origin and growth of the family historically considered. The family as the unit of society. The relation of husband and wife and of parents and children. The economic basis of family life. The psychology of family life. The family as the type of society. Its importance in the preservation of society. The pathology of the

family. The relation of the family to the general social organism, politically, religiously, and socially. Professor Blackmar.

COURSES FOR GRADUATES ONLY.

11.—Social and Political Theories. Tuesday and Thursday, by appointment. The first part of this course is devoted to the study of ancient and modern political theories. The laws of Moses as exemplified in the Hebrew commonwealth, Plato's Republic, Aristotle's Theory of Government, St. Augustine's City of God, Dante's De Monarchia, Machiævelli's Prince, Campanella's City of the Sun, More's Utopia and Bacon's Atlantis are the principal works read and criticized. The second part of the term is devoted to modern socialistic theories, including French and German socialists and recent development in social democracy. Conducted as a seminar. Professor Blackmar.

12.—American and European Charities. Wednesday and Friday, hour by appointment This course is especially for those who are looking forward to charity work or administration. A study of charity administration in the United States and some of the principal cities of Europe. Personal investigation of American charitable institutions with special reference to methods of state control. Professor Blackmar.

13.—American Ethnology. Monday, hour by appointment. Advanced course in the natural races of America. Migration and geographical distribution of tribes. Comparative characteristics of tribes and ethnic groups. Government and organization of tribes. The beginnings of civilization, the food-supply, and the progress in the industrial arts. Professor Blackmar.

*Economics.*

Courses 1 to 3, inclusive, are open to all students of the College. Courses 4 to 16 are for Juniors and Seniors, but may be taken also by Graduates, with the addition of such extra work as may be required by the instructor.

COURSES FOR UNDERGRADUATES ONLY.

1.—Elements of Economics. Three hours, 1st term, Monday, Wednesday, and Friday, at 3:30; two hours, 2d term, Tuesday and Thursday, at 3:30. This course endeavors to develop and explain the general laws of man's activity in the production, distribution and consumption of wealth. It serves, therefore, as the basis for a scientific understanding of industrial actions and relations, and as an aid to getting the fullest benefit from the following courses. Some of the main topics studied are: The nature and influence of economic wants; the nature and cause of value; the factors of pro-

duction and their organization; the influences determining the shares of product distributed as rent, wages, interest, and profits. Assistant Professor Cone.

2.—Economic History of England. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. The object of this course is to trace and explain the general development of agriculture, industry, and commerce in England. The period covered extends from the Saxon invasion to the present time, and special attention is given to early agriculture, early town life, merchant and craft guilds and other corporate privileges, and the rise of commerce, trade routes, markets, and fairs. Special industries and their effect on English life are traced. The Agrarian revolution, the peasants' revolt, enclosures; the national policy in industry and trade, the mercantile systems and the effect on English commerce, the great inventions of the eighteenth century, and the causes and nature of the industrial revolution, together with certain aspects of the English industrial supremacy of the past century, form the concluding features of the course. Assistant Professor Boynton.

3.—Economic History of the United States. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. The study of the economic development of the United States from the earliest colonial times down to the present is undertaken in this course. Attention is given to colonial agriculture, industry, and trade. The effect upon American life of the westward expansion, the economic significance of slavery in the South and in the country at large, the industrial development of the North prior to the civil war, and such important subjects as the history of the tariff, monetary legislation, the causes and effects of commercial crises, the development of railway transportation, the resources of the nation and the rise and importance of American manufactures will receive due attention. Finally, a survey will be made of the present industrial situation under corporate methods and of the outlook for democratic control of industrial conditions. Should be preceded by course 3. Assistant Professor Boynton.

COURSES FOR UNDERGRADUATES AND GRADUATES.

4.—Money and Credit. Two hours, 1st term, Tuesday and Thursday, at 3:30. Training in economic reasoning and a systematic knowledge of the fundamental principles of currency in its various forms are the chief aims of this course. The principal forms of money and of credit, as developed in the experience of the principal countries, and as at present in use in various parts of the world, are studied. Must be preceded or accompanied by course 1. Assistant Professor Cone.

5.—Banking. Two hours, 2d term, Tuesday and Thursday, at 1:30. Banking institutions, as the principal sources of credit in a readily usable form, are studied, both as to the principal historical steps in their development and as to their present forms and methods in different countries. The banking systems of the United States receive especial attention, including the suggestions for reform of the present organizations. Must be preceded by course 4. Assistant Professor Cone.

6.—Financial History of the United States. Three hours, 2d term, Monday, Wednesday, and Friday, at 3:30. This course will give a consecutive view of the experience of this country in providing mediums of exchange, in providing sources of government revenue, and in caring for and using the revenue. The laws of the United States in regard to currency, banking, public revenue, expenditure, and debt, the methods of administering those laws, and the resultant conditions, will be examined. The variety of this experience will furnish illustrations of the principles studied in courses 4, 5, and 7. Must be preceded or accompanied by course 1. Assistant Professor Cone.

7.—Public Finance. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. The theory of government expenditure is studied, illustrated by some reference to the experience of various governments. The different sources of government revenue are examined, taxation receiving chief attention. The creation, management, refunding and extinguishment of public debt are discussed. Must be preceded by course 1. Assistant Professor Cone.

8.—Corporate Finance. Two hours, 1st term, Tuesday and Thursday, at 2:30. The financial side of large business operations, as met with chiefly in corporations, is studied. Some of the topics considered are: The nature and relations of stocks and bonds in different forms; the methods pursued in marketing securities; the causes of stock-watering. All are examined with a view to giving a better understanding of both the private and public significance of frequently misunderstood corporate actions. This course is closely related to course 14. Must be preceded by course 1. Assistant Professor Cone.

9.—History of Commerce and Commercial Geography. Three hours, 1st term, Monday, Wednesday, and Friday, at 10. A brief survey is made of the commerce and trade routes of the ancient peoples surrounding the Mediterranean sea, of the effect of the crusades and of the stimulus given to mediæval commerce by the Italian cities and the Hanseatic League, the position of the trader and the merchant, together with the commodities of early

commerce, the restrictions, monopolies, trading companies and national policies with reference to trade are also discussed. The effects on Europe of the period of discovery and colonization are also traced. The development of the commerce of the separate nations is concluded to the present time, the policies they have pursued in securing it, and the natural advantages each possesses in the competition of the world market. Considerable attention is devoted to the sources of raw materials, to the location of the demand and supply of finished products, and to the governmental activities to stimulate national prestige along commercial lines. Should be preceded by courses 1 to 3, inclusive. Assistant Professor Boynton.

10.—Economic Resources and Activities of European Countries. Two hours, 2d term, Tuesday and Thursday, at 11. The studies of the natural resources of industrial nations and their present economic life and activity will be the subject-matter of this course. The present conditions of agriculture, mining, manufacturing, and industry in general, together with the internal trade and foreign commerce of each country, will be investigated, and the governmental policies designed to encourage industry and trade will also be a feature of the course. Finally, the trade relations of these countries among themselves and with other nations and their competition for the markets of the world will conclude the investigation of the subject. Should be preceded by courses 1 to 3, inclusive, or course 10. Assistant Professor Boynton.

11.—Transportation. Two hours, 1st term, Tuesday and Thursday, at 11; three hours, 2d term, Monday, Wednesday, and Friday, at 11. Primitive and improved methods of transportation are studied in their economic aspects. The historical development of the canal and the railway, their relation to each other and to society in this and other countries, the problems of local and individual discrimination, the theory of railroad rates, state ownership, regulation and control, all receive careful attention. The work of the Interstate Commerce Commission will be reviewed, as well as the history and financiering of several typical American railway systems. Should be preceded by courses 1 to 3, inclusive. Assistant Professor Boynton.

12.—Labor Problems and History of Trades-unionism. Three hours, 1st term, Monday, Wednesday, and Friday, at 11. This course is designed to investigate those problems of labor arising from the existence of a laboring class, an employing class, and the mutual relations existing between the two. These peculiar problems, from the standpoint of employer and employee, under modern conditions of production and distribution, together with the

history of trade-unionism in European countries and in America, form the principal features of the course. The course, then, is designed to furnish a general knowledge of the past and present conditions of the laboring man and his relation to his employer. Should be preceded by courses 1 to 3, inclusive. Assistant Professor Boynton.

13.—Insurance. Three hours, 2d term, Monday, Wednesday, and Friday, at 2:30. The economic principles underlying all forms of insurance, and especially the theory of the equalization of the burden of loss, receive careful attention. The general economic nature of risk is pointed out, risks are classified, and those falling in the insurable class are given especial attention. The different groups of insurance—marine, fire, life—and various newer extensions of the principles to other kinds of risks, are treated. The various forms of insurance organization, as stock companies, mutual and fraternal organizations, and various modifications of these are considered. Must be preceded by course 1. Assistant Professor Cone.

14.—Accounting. Two hours, 2d term, Tuesday and Thursday, at 2:30. The object of this course is to develop the economic principles underlying the so-called higher accounting, which aims to give at all times a true and complete, but condensed, representation of the real condition of the particular business to which it is applied. In order to succeed in this, it must be based upon the most careful economic analysis. Some typical illustrations, taken from the practice of large corporations, will be studied. This course is closely related to course 8. Must be preceded by course 1. Assistant Professor Cone.

15.—Economic Theory to Adam Smith. Two hours, 1st term, Tuesday and Thursday, at 1:30. The growth of thought about economic matters in ancient, mediæval and modern times, down to about the end of the eighteenth century, is studied, chiefly from the works of the original writers, although the histories and commentaries are not ignored. This study furnishes many points for suggestive contrast and comparison between earlier and later theories, and explains many otherwise incomprehensible features of modern economic theories. Must be preceded by course 1. This course and course 16 will be given in alternate years. (Not given in 1906–'07.) Assistant Professor Cone.

16.—Economic Theory since Adam Smith. Two hours, 1st term, Tuesday and Thursday, at 1:30. The extensive and important economic literature of the nineteenth century is the subject-matter of this course. The important economists are all studied at

first hand, and occasional attention is given to the works of minor writers, in cases where their writings contain important germs of theories later developed by others of greater prominence. This course serves not only to explain the growth of present views but also to give a fuller body of economic doctrine than can be given in course 1. Must be preceded by course 1. (Not given in 1905–'06.) Assistant Professor Cone.

## SPANISH.

(See Romance Languages and Literatures.)

## ZOOLOGY.

Associate Professor McCLUNG.
Professor DYCHE.
Associate Professor HUNTER.
Mr. BAUMGARTNER.

### EQUIPMENT.

The department is in the possession of ample facilities in the way of specimens and apparatus for the presentation of the courses outlined below. The extensive collections of birds and mammals are now rendered accessible by their location in the new Museum building. The historical development of vertebrate life is made teachable by the large paleontological collections in the museum. Representative types of invertebrates from the Atlantic and Pacific coasts, as well as from Bermuda, make possible the thorough treatment of almost any of the lower orders. Histological, cytological and embryological material of great variety has been provided. Microscopes, microtomes and other apparatus necessary for even the most advanced work are at hand. The well-equipped preparation rooms make instruction in museum methods very thorough.

### ADVICE AS TO CHOICE OF COURSES.

Courses 1 and 2 are designed as an introdution to the subject, and, so far as possible, give a general survey of the animal kingdom. The character of the work is such as to lay particular stress upon training in the independent observation and correlation of facts. They are, therefore, courses which may be taken by those who wish merely to gain a general idea of zoology and to become acquainted with the methods of scientific work. As elementary courses they form a basis for any advanced work. Taken with course 1 in botany and 2 or other equivalent botanical work, they complete a year's training in elementary biology.

Courses 3 and 4 logically follow courses 1 and 2, and should be taken by those who desire a more comprehensive view of the subject

than can be gained in a half-year's study. While more advanced in character than the first course, they are not too technical for the general student. They should be taken by all wishing to continue in the more advanced courses.

Course 5 may be taken with advantage by students who have had courses 1 and 2, or preferably 1, 2, 3, and 4, and who expect to teach zoology in the high school without making a specialty of the subject.

Course 6 is the last of the general courses, and completes the work of preparation desirable for students who wish to take up a detailed study of zoology in more or less limited fields. It may follow courses 1 and 2 in the case of students who choose to enter directly into systematic work.

In all cases students are urged to secure during their Freshman and Sophomore years as much training as possible in physics, chemistry, botany, and the modern languages.

COURSES FOR UNDERGRADUATES.

1.—Elementary Zoology. Three hours, 1st term, Monday, Wednesday, and Friday, 1:30 to 3:30. A course in the general principles of zoology. The work consists of a laboratory study of type specimens, together with lectures upon classification, habits, distribution, etc. Open to all students of the College. Associate Professor McClung and Mr. Baumgartner.

2. Elementary Zoology. Two hours, 2d term, Tuesday and Thursday, 1:30 to 3:30. A continuation of course 1, dealing with the lower invertebrates principally. Associate Professor McClung and Mr. Baumgartner.

3. Morphological Zoology. Two hours, 1st term, Tuesday and Thursday, 1:30 to 3:30. A continuance of the work begun in courses 1 and 2, pursued, however, in a more thorough and detailed way. The chordates are studied principally. Open to all students of the College who have taken courses 1 and 2. Associate Professor McClung or Mr. Baumgartner.

4.—Morphological Zoology. Three hours, 2d term, Monday, Wednesday, and Friday, 1:30 to 3:30. In this course the Protozoa, Porifera, Cœlenterata, Vermes, Arthropoda and Echinodermata are given more detailed consideration than is possible in courses 1 and 2. Especial attention is given in the study of indigenous forms to habits, habitats, and life-histories. Mr. Baumgartner.

COURSES FOR UNDERGRADUATES OR GRADUATES.

5.—Teachers' Course. 1st term, daily, 3:30 to 5:30. A course in zoology for those who expect to teach. Methods used in collecting, preserving and preparing specimens for the museum and class-

room. Methods of instruction. Open to all who have taken courses 1 and 2 or their equivalent. Professor Dyche.

6.—Systematic and Descriptive Zoology. Throughout the year, 3:30 to 5:30. Lectures, with exhibition of specimens. Laboratory work in systematic zoology. Open to Juniors, Seniors and Graduates who have taken courses 1 and 2. Professor Dyche.

7.—Histology, or Microscopic Anatomy. Five hours, 1st term, Monday, Wednesday, and Friday; 2d term, Tuesday and Thursday, 3:30 to 5:30. Microscopical manipulation, the study of normal tissues and the methods of preparing mounted objects are presented in this course. Lectures and laboratory work. Open to Juniors, Seniors and Graduates who have taken courses 1 and 2 or equivalents. Mr. Baumgartner.

8.—Cytology, or Cellular Biology. Throughout the year, by appointment. A course in cell structure and development. Lectures and laboratory work. Open to Juniors, Seniors and Graduates who have taken courses 1, 2, 3, and 4. Associate Professor McClung.

9.—Embryology. 2d term, by appointment. The ontogeny of the chick, shark, etc. Open to Juniors, Seniors and Graduates who have taken course 8. Associate Professor McClung.

10.—Paleozoology. By appointment. A course dealing with the succession of animal life upon the earth. Open to Juniors, Seniors and Graduates who have had courses 1 and 2. Geology 1 is recommended as further preparatory work. Associate Professor McClung.

11.—Echinoderms. One term, by appointment. This course deals with the development and morphology of echinoderms. Open to Juniors and Seniors and Graduates who have taken courses 1 and 2. Associate Professor Hunter.

12.—Vermes. One term, by appointment. The development and morphology of vermes. For those who intend to study medicine, special attention is given to parasitic forms. Associate Professor Hunter.

13.—Seminar. One or two hours, 1st and 2d terms. An opportunity is offered a limited number of sufficiently prepared students to take up the literature of important researches upon special topics or upon general biological problems. The results obtained must be embodied in carefully prepared papers and given in the form of lectures.

COURSES FOR GRADUATES ONLY.

14.—Advanced Original Work in Morphological Zoology. Throughout the year, by appointment. Associate Professor McClung.

15.—Advanced Original Work in Systematic and Descriptive Zoology. Throughout the year, by appointment. Professor Dyche.

16.—Advanced Original Work in Histogenesis and Organogenesis. Throughout the year, by appointment. Associate Professor McClung.

17.—Advanced Original Work in Cytology. Throughout the year, by appointment. Associate Professor McClung.

18.—Advanced Original Work in Vertebrate Paleontology. Throughout the year, by appointment. Associate Professor McClung.

19.—Museum Work and Methods. By appointment. Professor Dyche.

20.—Comparative Anatomy and Osteology. By appointment. Professor Dyche.

Students desiring to do graduate work in the department must be able to read French and German, and must have special preparation for the work they wish to undertake. It is recommended that at least four terms' work be offered for the major requirement of the master's degree.

## Courses in Business

**In its Higher Relations.**

**Leading to General Business, Banking, Insurance, and Journalism.**

### Leading to the Degree of Bachelor of Arts.

The following courses do not in any sense form a school of commerce or business, nor is such a school contemplated. They are organized within the College of the University. They are not, except as to the regular required work of all students in the College, required courses, but are made up of the elective open to all students alike.

The courses are designed, however, to offer to the large number of men who enter business from the University somewhat the same definite assistance that it gives those who are to be engineers, lawyers, etc. This has been made possible by a large development of late years of special courses in language, history, mathematics, sociology, and economics. It is not expected that the University can do more than to organize into programs of study leading to definite ends such courses as now may be offered, and such others, few in number, as it may be possible to add. The University does not seek to furnish that large portion of business training which can come only from experience. It undertakes to give the fundamental and specialized courses of study that illustrate the economic forces that control the business world. It aims at the same time to give the cultural training which is indispensable to the thoroughly enlightened citizen.

### Lectures.

In addition to the regular classroom work, lectures will be given by men eminent in the profession or calling which they represent. The lectures will have for an object the illustrating from experience of the theory presented in the classroom, and of the relation of the fundamental principles enumerated in the courses to actual experience. Students in these courses will be expected to attend the lectures.

### Grade of the Work.

The following courses are therefore based upon the requirements for entrance to the College, and also upon the required work of the Freshman and Sophomore years. The remaining work is in the main definitely suggested for the guidance of the student in his choice of subjects. It is also rather more exacting in its requirements than the average work elected by students.

### Courses of Study.

**Freshman and Sophomore Years, in All Courses.**

In the Freshman and Sophomore years, the courses in general business, insurance, banking and journalism are alike.

### Requirements.

1. Students entering these courses must have met the requirements for admission to the Freshman class of the College.

2. Students entering these courses must do also all the required work of the Freshman and Sophomore years, as laid down in this catalogue.

3. After doing the required work of the Freshman and Sophomore years, thirty hours of work remain in those years, which should be so distributed that not less than three hours of work are taken in each of the following subjects:

English.
Foreign Language.
Physical Science (Physics 1 if not taken in high school and if Insurance is wanted).
Biological Science.
Elements of Economics.
European History.
Mathematics.*

### Course in General Business.

JUNIOR YEAR.

*First Term:*

American Jurisprudence and Elementary Law, or Contracts. Five hours.
History of Commerce and Commercial Geography. Three hours.
Elements of Sociology. Three hours.
Foreign Language, or English. Two or three hours.
Physical Science, or Mathematics. Three or two hours.

*Second Term:*

Financial History of the United States. Three hours.
Economic Resources and Activities of European Courtries. Two hours.
Constitutional Law. Three hours.
International Law. Two hours.
English, or Foreign Language. Three or two hours.
Mathematics, or Physical Science. Two or three hours.

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*Students entering the Freshman class with plane trigonometry, or who take plane trigonometry in the Freshman year, may take surveying here.

SENIOR YEAR.

*First Term:*

Public Finance. Three hours.
Corporate Finance. Two hours.
Social Pathology. Two hours.
Transportation. Two hours.
Labor Problems and History of Trade-unionism. Three hours.
History, English, Foreign Language, or Physical Science. Three hours.

*Second Term:*

Transportation. Three hours.
Accounting. Two hours.
Social and Economic Statistics. Two hours.
European History of the Nineteenth Century. Three hours.
Foreign Language, or English. Two hours.
Administration of Charitable and Penal Institutions (Social Path. Con.) Three hours.

**Course in Banking.**

JUNIOR YEAR.

*First Term:*

American Jurisprudence and Elementary Law, or Contracts. Five hours.
Money and Credit. Two hours.
History of Commerce and Commercial Geography. Three hours.
Foreign Language, or English. Two or three hours.
Mathematics, or Physical Science. Three or two hours.

*Second Term:*

Banking. Two hours.
Financial History of the United States. Three hours.
Constitutional Law. Three hours.
International Law. Two hours.
English, or Foreign Language. Two or three hours.
Physical Science, or Mathematics. Three or two hours.

SENIOR YEAR.

*First Term:*

Public Finance. Three hours.
Corporate Finance. Two hours.
Transportation. Two hours.
Labor Problems and History of Trades-unionism. Three hours.
Presidential Administrations. Five hours.

*Second Term:*

Economic Resources and Activities of European Countries. Two hours.
Transportation. Three hours.
Accounting. Two hours.
European History of the Nineteenth Century. Three hours.
Presidential Administrations. Five hours.

### Course in Insurance.

JUNIOR YEAR.

*First Term:*

American Jurisprudence and Elementary Law, or Contracts. Five hours.
Money and Credit. Two hours.
Foreign Language, or English. Two or three hours.
Physical or Biological Science. Three or two hours.
Mathematics. Three hours.

*Second Term:*

Banking. Two hours.
Financial History of the United States. Three hours.
Physical or Biological Science. Two or three hours.
English, or Foreign Language. Two hours.
Mathematics. Three or two hours.
Building Materials. Three hours.

SENIOR YEAR.

*First Term:*

Law of Insurance and Agency. Five hours.
Public Finance. Three hours.
Corporate Finance. Two hours.
History of Commerce and Commercial Geography. Three hours.
Transportation. Two hours.

*Second Term:*

Transportation. Three hours.
Insurance. Three hours.
Accounting. Two hours.
Social and Economic Statistics. Two hours.
Economic Resources and Activities of European Countries. Two hours.
English, or Foreign Language. Three hours.

**Course in Journalism.**

JUNIOR YEAR.

*First Term:*

American Colonial History. Five hours.
Elements of American Jurisprudence (*a*). Two and one-half hours.
Elementary Law (*b*). Two and one-half hours.
Advanced English Composition. Two or three hours.
Ethics, Economic History of England, or English, or other literature. Two or three hours.

*Second Term:*

Constitutional Law. Three hours.
International Law. Two hours.
English, or other Literature. Three or two hours.
Advanced English Composition. Two or three hours.
Economic History of United States. Three hours.
Ethics, Banking, or Economic Resources and Activities of European Countries. Two hours.

SENIOR YEAR.

*First Term:*

Newspaper Writing. Three hours.
English Literature. Two hours.
American History. Five hours.
Elements of Sociology, or Public Finance. Three hours.
Social Pathology, or Corporate Finance. Two hours.

*Second Term:*

Newspaper Writing. Two hours.
English Literature. Three hours.
American History. Five hours.
Social Pathology (continued), or Financial History of United States. Three hours.
Social and Economic Statistics, or Elements of Sociology (con.). Two hours.

## Courses in Domestic Science.

The University offers for next year a few courses in domestic science. These courses are of strictly University grade, and, if experience warrants, will be added to as time goes on until a fully formulated course results. The work is organized within the College and the courses given are on the same plane as other elective courses. Students electing such work must conform to all requirements for entrance to the Freshman class of the College, and must do all the required work of the Freshman and Sophomore years. The work in the main is open to Juniors and Seniors only.

The following courses will be offered for the year 1905–'06:

Household Architecture. To include among other things, sanitation, ventilation, decoration, etc., together with lectures upon trees, plants, and grounds. One term.

Physiology and Hygiene. To include, among other things, simple applied therapeutics, treatment of accidents, the principles of nursing, etc. One term.

Sociological and Historical Study of the Family. One-half term.

Bacteriology. To include a treatment of the more important bacteria of food and water, and the prevention of the spread of infectious diseases. One half term.

Physical Education, Theory and Practice. To include, among other things, the physiology of childhood and the physical education of children.

Chemistry and Physiology of Foods. To include, among other things, dietetics, balanced rations, standard supplies, and full laboratory work. One term.

# III. The School of Engineering.

## Faculty.

FRANK STRONG, Ph. D., President.

FRANK O. MARVIN, A. M., Dean. Professor of Civil Engineering.

EPHRAIM MILLER, Ph. D., Professor of Mathematics and Astronomy.

WILLIAM H. CARRUTH, Ph. D., Professor of Germanic Languages.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

LUCIEN I. BLAKE, Ph. D., Professor of Physics and Electrical Engineering.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

ERASMUS HAWORTH, Ph. D., Professor of Physical Geology and Mineralogy.

EUGENIE GALLOO, A. M., Professor of Romance Languages and Literatures.

HENRY B. NEWSON, Ph. D., Associate Professor of Mathematics.

EDWARD BARTOW, Ph. D., Associate Professor of Chemistry.

HOWARD D. HESS, M. E., Associate Professor of Mechanical Engineering.

FRANK E. WARD, Superintendent of Fowler Shops.

MARTIN E. RICE, M. S., Secretary. Assistant Professor of Physics and Electrical Engineering.

ELMER F. ENGEL, A. M., Assistant Professor of German.

WALTER R. CRANE, Ph. D., Assistant Professor of Mining Engineering.

HAMILTON P. CADY, Ph. D., Assistant Professor of Chemistry.

GEORGE L. LINCOLN, A. M., Assistant Professor of Romance Languages and Literatures.

WILLIAM C. HOAD, B. S., Assistant Professor of Civil Engineering.

JOHN N. VAN DER VRIES, Ph. D., Assistant Professor of Mathematics.

FREDERIC N. RAYMOND, A. M., Assistant Professor of English.

RICHARD M. FREEMAN, E. E., Assistant Professor of Electrical Engineering.

Frank E. Bryant, A. M., Assistant Professor of English.

George J. Hood, B. S., Assistant Professor of Mechanical Drawing.

David F. McFarland, A. M., Assistant Professor of Chemistry.

Charles H. Ashton, A. M., Assistant Professor of Mathematics.

Albert K. Hubbard, Ph. B., Assistant Professor of Civil Engineering.

Charles I. Corp, B. S., Assistant Professor of Mechanical Engineering.

Edwin F. Stimpson, B. S., Instructor in Physics Laboratory.

George W. Hanson, Forge and Foundry Instructor.

Frank E. Jones, Instructor in Pattern-making.

## Purpose of the School.

The School of Engineering is the scientific or technical school of the University. It offers what is, in the main, technical training in the various departments of engineering—civil, electrical, mechanical, mining, and chemical. The course of study in each of these branches of engineering is designed first of all to furnish a broad and thorough training in mathematics, mechanics, drawing, and physical science, the fundamental subjects on which the more professional subjects are based. The five courses are nearly identical up to the end of the Sophomore year, but differ considerably thereafter, each emphasizing the subjects peculiar to itself and giving as much technical training as is consistent with the thorough inculcation of sound theory.

## Degrees.

All courses in the School of Engineering lead to the degree of bachelor of science.

All work for higher degrees is under the supervision of the Faculty of the Graduate School. For the regulations governing the granting of advanced degrees, see announcements under the head of "Graduate School," and for the work open to graduate students, see "Courses of Instruction."

## Admission.

There are two methods of admission to the School of Engineering of the University: First, by examination; second, by certificate.

### 1. By Examination.

Times and place of examination for admission to the School of Engineering are the same as for admission to the College. Candidates may divide the examination between two years, as noted.

### 2. By Certificate.

Nearly all students enter the School of Engineering by certificate from high schools, academies, preparatory schools of other colleges and universities, or from military schools, accredited by the University. The candidate for admission by certificate must present either a certificate or other credential, as noted in connection with admission to the College. The same rules apply in regard to admission by certificate to the School of Engineering as apply for admission to the College.

### Deficiencies and Units of Admission.

The candidate may be admitted to the Freshman class although deficient in some of the requirements as laid down below, provided such deficiency does not exceed three units, and that not more than one unit be in any one required subject. All deficiencies must be made good within such time as may be fixed in each individual case by the Dean of the School of Engineering.

Applicants for admission are advised to come without deficiencies, and to be especially well prepared in algebra and geometry.

An entrance unit represents five periods a week, of not less than forty minutes each, for thirty-five weeks A unit in the School of Engineering represents five periods a week for a half-year. In making up deficiencies in University classes, one School of Engineering unit is counted as equivalent to one entrance unit.

### Subjects for Admission.

Fifteen units are required for admission.

| REQUIRED. | | OPTIONAL. | |
|---|---|---|---|
| Mathematics 1, 2, 3, algebra and plane and solid geometry | 3 units. | Latin 1, 2, 3, | 3 units. |
| English 1, 2, 3, | 3 " | German 1, 2, 3, | 3 " |
| Physics | 1 " | French 1, 2, 3, | 3 " |
| Free-hand drawing | 1 " | Greek and Roman history | 1 " |
| Foreign language—may be French or German or Latin; 3 units of one, or 2 units of any one and 1 unit of any other, | 3 " | English history | 1 " |
| | | American history | 1 " |
| | | Chemistry | 1 " |
| | | Higher algebra and plane trigonometry | 1 " |
| | | Physical geography | 1 " |
| | | Botany | 1 " |
| | | Zoology | 1 " |
| | | Economics | 1 " |
| | | Manual training | 1 " |
| Required, | 11 units. | | |
| Optional, | 4 units. | | |
| Total, | 15 units. | | |

Four units must be chosen from the optional list.

### College Credit.

College credit for work in preparatory schools will be given upon examination only. For times and place of such examination, see the College section of this catalogue.

### Accredited Schools.

The list of schools accredited to the School of Engineering is practically the same as that of schools accredited to the College.

### Admission to Advanced Studies.

For any advanced rank, the applicant must have completed all of the studies of the course below the rank for which he applies, including the entrance requirements, or their substantial equivalent, as determined by the committee on advanced standing. Applications for credits in single subjects will also be passed upon by this committee.

### Special Students.

Opportunity is given in the School of Engineering for the admission of persons of mature years who desire to pursue some special line of work, without following any prescribed course or becoming candidates for a degree.

The admission of such special students is directly under the control of the Dean of the School of Engineering, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for standing as special students must present satisfactory evidence of proper preparation for the studies desired and must also meet other requirements as fixed by the Faculty.

Special students are subject to the same regulations as regular students with regard to the quality of work performed and attendance at recitations and examinations, but not as to number of studies to be pursued.

### Registration and Enrolment.

All candidates for admission to the School of Engineering having high-school certificates, and all students intending to pursue their studies in the ensuing year, must present themselves for registration at the University on September 6 to 9, inclusive, 1905. Registration at a later date will be permitted only on the presentation of a satisfactory reason for the delay.

The Dean of the School of Engineering is charged with the execution of all University and Faculty rules relating to the enrolment of students in classes and their choice of studies.

Upon registration, each student will receive from the Registrar a certificate of his standing, which he will present to the Dean of the

school, together with a list of the studies which he desires to pursue. This choice must be approved by the Dean.

At least two weeks before the close of any term, each student then in attendance must present his application for enrolment for the term following to the Dean, whose approval of the work selected is a necessary condition for admission to classes.

### Inadequate Preparation.

When students show by their current work insufficient entrance preparation in any study, they may be required to make good such deficiency in any manner prescribed by their instructors.

### Grades and Failures.

Examinations are held at regular stated periods and at such other times as may be provided for by the regulations of the Faculty. At the close of each term, a summary of the student's work is reported to the Registrar, for entry upon the general record. At the end of each half year, the parent or guardian of each student, or the student, will be furnished, on request, a copy of the entries relating to that student.

Absence from examination or failure in more than one-third of his work, in any one term, severs a student's connection with the University.

## Expenses.

By legislative enactment each student from the state of Kansas in the School of Engineering must pay a matriculation fee of five dollars (paid but once, on entrance), and a yearly incidental fee of ten dollars. Non-residents of Kansas must pay a matriculation fee of ten dollars, and an incidental fee of twenty dollars.

**Shop and Laboratory Supplies.** All the laboratories of the University and their equipment of power, engines, machinery, light, desks, tables, balances, microscopes, models and complete apparatus are at the disposal of the students, under the direction of their instructors. These desks, benches and tables will be further provided with individual sets of tools, sets of working apparatus and equipment, for which the student will be held responsible and expected to return in good condition. Students are requested to check these up at time of entering a laboratory course to see that they get all that are charged to them. At the end of the course, or at the discretion of the instructor, all the individual equipment, in good order, must be returned. Such as may have been lost, damaged, broken or destroyed by the student must be paid for by him at that time. Material of every kind consumed, ground up or used in the

manifold experiments and practices in the laboratories must be paid for by the student. Students providing themselves with the exact change may obtain this of the storekeeper in any quantity at the various department storerooms at its cost. For the economic and prompt supply of such material, coupon books, good in all departments, are furnished at the business office, in the amounts of five dollars and two dollars. Any coupons unused are redeemable in cash at the Secretary's office at the end of the course.

**Summer Field-work.** No fee will be charged for the use of instruments in summer field-work. Each student will be charged the actual cost of living, and incidental expenses.

**Other Expenses.** There are no dormitories connected with the University. Students find accommodations in the boarding-houses and homes of Lawrence. Information concerning the location of rooming- and boarding-places may be had at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at $4 a week. Some persons who furnish plain rooms and good, plain food receive boarders at $3 a week. Day board in private families and at city restaurants may be obtained for $2.75 to $4 a week. Day board in clubs varies from $2 50 to $3 a week. Furnished rooms, usually occupied by two students, range from $4 to $15 a month. Unfurnished rooms rent for $1.50 to $3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can attend the University for very little cost in money.

The following table shows the estimated expenses of a student of the University for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends upon the tastes and habits of the student:

| | *Low.* | *Average.* |
|---|---|---|
| Board | $100 00 | $120 00 |
| Room | 20 00 | 40 00 |
| Books and stationery | 8 00 | 15 00 |
| Laundry | 8 00 | 20 00 |
| Matriculation and other fees | 15 00 | 15 00 |
| Incidentals | 15 00 | 50 00 |
| Totals | $166 00 | $260 00 |

**Self-help.** Many students find work in private families, in offices, and in various occupations, by means of which they defray a portion of their expenses. Some students have earned their entire expenses while in attendance, and have made good records at the

same time; other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they came. If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. The University cannot guarantee work to any student, but will lend every possible assistance in finding employment. The University Christian Associations maintain employment bureaus, where the names of those seeking work and of those desiring workers are recorded. Students desiring to help themselves are advised to apply early to the University Y. M. C. A. or to the Registrar, University of Kansas, Lawrence.

# Courses of Study.

**Leading to the Degree of Bachelor of Science.**

The courses of study in the School of Engineering are almost entirely required. The work is in the main technical, and requires preparation of a high order, especially in mathematics. It also requires exhaustive effort in the courses themselves, which call for the entire time of the student to do it satisfactorily.

The work of the Freshman year is common to all students of the School of Engineering, so that a choice between the several lines of engineering need not be made until after a year's experience with college life. As a further aid in making an intelligent choice, the general aims of the several courses are here briefly stated.

**Civil Engineering.** The first aim is to impart as broad a scientific training as the length of the course and the essential professional studies will allow, so that as many avenues to successful service as possible may be open to the graduate. Along professional lines, emphasis is laid first on work in surveying and field methods, as these are of special value to young engineers; second, on mechanics and its applications to the designs of roofs and bridges and other structures; third, on railway location and construction; fourth, on hydraulics and its applications to irrigation and canal work; fifth, on sanitary and municipal engineering, including water-supply, sewerage, and roads and pavements. Stress is placed on the study of principles, as being the things not likely to be acquired in after-life.

**Electrical Engineering.** The course in electrical engineering is designed to train the student in those fundamental principles of applied mathematics, chemistry, mechanics and electricity which form the basis of all successful specialization. The laboratory and shop work is arranged to develop and to encourage individual skill and ingenuity. Such experience in practical work as is possible is also included. The thesis work involves original investigation.

**Mechanical Engineering.** This course offers thorough preparation in the scientific subjects in which the engineer must be trained who is to devote himself to questions involved in the designing, manufacturing and operating of machinery of every description, and in the filling of executive positions in manufacturing industries. The function of this course is twofold: To offer to the students of the other engineering courses such lines of work as their particular needs require, and to afford students of the University an opportu-

nity to specialize in the direction of the purely mechanical side of engineering. Especial stress is laid upon the designing of machinery and the preparation of the necessary working-drawings, a familiarity with the operations involved in the construction of engines, boilers, machinery, and mechanical appliances of all kinds.

**Mining Engineering.**—The object of the course in mining is to qualify students for future work in prospecting, mining, milling, and smelting, in accordance with modern scientific principles. In adopting the course of study, it was endeavored to include a sufficient requirement in language work to give the student a good knowledge of English, French, and German, and to adjust the various essential subjects—mathematics, engineering, chemistry, metallurgy, mining, mineralogy, and geology—so that upon the completion of the course one may be well qualified for specializing along any line which his future life may make desirable.

**Chemical Engineering.**—This course affords students an opportunity to specialize in chemistry, and to fit themselves for positions as chemists, managers or superintendents of manufacturing plants where the work is based on chemical science. This would include such industries as that of iron, zinc, gold and silver smelting and refining, the making of fertilizers, clay-working, sugar-refining, dyeing, bleaching, gas-making, cement-making, and general chemical manufacture. This course is broad enough for general training, and may be made special enough for technical work.

## Work in Common.

FRESHMAN YEAR.

All students of the School of Engineering have work in common during the Freshman year, the differentiation between courses occurring in the Sophomore year. In the statement of courses below, following each subject is stated the number of hours per week of class exercise given to it; (*a*) and (*b*) signify first and second half-terms.

The modern foreign language chosen must be carried throughout the year, five hours each term.

The grade of the courses will depend on the amount and kind of language offered for entrance.

*First Term:*

English 1, five hours, at 8, 9, or 4:30. Miss Lynn and assistants.

French, German, or Spanish, five hours.

College Algebra (Mathematics 2), three hours, Monday, Wednesday, and Friday, at 8, 9, 10, 11:15, or 3:30.

Plane Trigonometry (Mathematics 3), two hours, Tuesday and Thursday, at 8, 9, 10, 11:15, or 3:30.

Free-hand Drawing (Mechanical Drawing 1), six hours for first six weeks of term. Monday, Wednesday, and Friday, from 8 to 10, or 1:30 to 3:30; or Tuesday and Thursday, from 1:30 to 3:30, and Saturday, from 8 to 10. Assistant Professor Hood and assistants.

Geometrical Drawing (Mechanical Drawing 2), six hours for last fourteen weeks of term. Same days and hours as for free-hand drawing. Assistant Professor Hood and assistants.

Shop Work 1 or 2, five hours. Mr. Hanson and Mr. Jones.

*Second Term:*

French, German, or Spanish, five hours.

Analytical Geometry A (Mathematics 4), two hours, Tuesday and Thursday, at 8, 9, 10:15, 2:30, or 3:30.

Calculus A (Mathematics 5), three hours, Monday, Wednesday, and Friday, at 8, 9, 10:15, 2:30, or 3:30.

Descriptive Geometry (Mechanical Drawing 3), three hours, Monday, Wednesday, and Friday, at 8, 9, or 4:30. Assistant Professor Hood and assistants.

Elementary Mechanics (Mechanics 4), two hours, at 8, 9, or 4:30. Assistant Professor Hood and assistants.

Projection Drawing (Mechanical Drawing 4), six hours, Monday, Wednesday, and Friday, from 8 to 10 or 1:30 to 3:30; or Tuesday and Thursday, from 1:30 to 3:30, and Saturday, from 8 to 10. Assistant Professor Hood and assistants.

Shop Work 1 or 2, five hours. Mr. Hanson and Mr. Jones.

For irregular students, classes in English, algebra and trigonometry, French 1 and German 1 are given in the second term, and classes in analytical and descriptive geometry, French 2 and German 2 are given in the first term.

## Civil Engineering.

SOPHOMORE YEAR.

*First Term:*

Physics 4, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Mr. Stimpson.

Chemistry 2 B, lectures three hours and laboratory four hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.

Calculus B (Mathematics 7), three hours, Monday, Wednesday, and Friday, at 10:15 or 1:30.

Analytical Geometry B (Mathematics 6), two hours, Tuesday and Thursday, at 10:15 or 1:30.

Shades, Shadows, and Perspective (Mechanical Drawing 5), six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hubbard.

Shop Work 3, five hours, 1 to 6. Mr. Ward.

One technical report.

*Second Term:*

Physics 5, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Mr. Stimpson.

Surveying (Civil Engineering 5), five hours, at 10:15, and field-work five hours. Assistant Professors Hoad and Hubbard.

Qualitative Analysis (Chemistry 3), lectures two hours and laboratory six hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.

Topographical Drawing (Civil Engineering 1), six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hubbard.

Shop Work 4, five hours, 1 to 6. Mr. Ward.

One technical report.

*Summer Vacation:*

Surveying (Civil Engineering 6). Assistant Professors Hoad and Hubbard.

JUNIOR YEAR.

*First Term:*

Mechanics 1, five hours, at 9. Professor Marvin.

Advanced English Composition (English 2), four hours, Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Assistant Professor Raymond.

Geology 1, five hours, at 11:15. Professor Haworth.

Railway Surveying (Civil Engineering 11), five hours, at 10:15, and field-work, five hours. Assistant Professors Hoad and Hubbard.

Railway Drawing (Civil Engineering 2), six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hoad.

*Second Term:*

Strength of Materials (Mechanics 2), four hours, at 10:15. Professor Marvin.

Engines and Boilers (Mechanical Engineering 7), five hours, at 11:15. Associate Professor Hess.

Location of Railways (Civil Engineering 10), three hours, Monday, Wednesday, and Friday, at 9. Assistant Professor Hoad.

Roads and Pavements (Civil Engineering 9), two hours, Tuesday and Thursday, at 9. Assistant Professor Hoad.

Graphical Statics (Civil Engineering 3), six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hoad.

Testing Laboratory (Mechanics 3), four hours, Tuesday, Thursday, or Friday, 1:30 to 5:30, or Saturday, 8 to 12. Assistant Professors Hood and Corp.

One technical report.

*Summer Vacation:*

Surveying (Civil Engineering 4). Assistant Professors Hoad and Hubbard.

SENIOR YEAR.

*First Term:*

Hydraulics (Mechanics 4), (*a*), four hours, at 10:15. Assistant Professor Hubbard.

Hydraulic Machinery (Mechanical Engineering 10), (*b*), four hours, at 10:15. Associate Professor Hess.

Hydraulic Laboratory (Mechanics 5), two hours, Tuesday, Thursday, or Friday, 3:30 to 5:30. Assistant Professor Hood.

Roofs and Bridges (Civil Engineering 14), ten hours, 1:30 to 3:30. Professor Marvin.

Sewerage (Civil Engineering 12), (*a*), five hours, at 11:15. Assistant Professor Hoad.

Water-supply (Civil Engineering 13), (*b*), five hours, at 11:15. Assistant Professor Hoad.

Masonry (Civil Engineering 8), (*b*), five hours at 9. Assistant Professor Hubbard.

One technical report.

*Second Term:*

Bridge Designing (Civil Engineering 15), ten hours, 1:30 to 3:30. Professor Marvin.

Contracts and Specifications (Civil Engineering 4), (*b*), five hours, at 11:15. Professor Marvin.

Cement Laboratory (Civil Engineering 7), four hours, Tuesday and Thursday, 3:30 to 5:30. Assistant Professor Hubbard.

One full term's work chosen from engineering, mathematical or science subjects not required in course.

Thesis.

## Electrical Engineering.

SOPHOMORE YEAR.

*First Term:*

Physics 4, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Mr. Stimpson.

Calculus B (Mathematics 7), three hours, Monday, Wednesday, and Friday, at 10:15 or 1:30.

Analytical Geometry B (Mathematics 6), two hours, Tuesday and Thursday, at 10:15 or 1:30.

Chemistry 2 B, lectures three hours and laboratory four hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.

Machine Drawing (Mechanical Drawing 6), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professor Hood and assistant.

Shop Work 3, five hours, 1 to 6. Mr. Ward.

One technical report.

*Second Term:*

Qualitative Analysis (Chemistry 3), lectures two hours and laboratory six hours, 8 to 10. Assistant Professor Cady and Mr. Faragher. Physics 5, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Mr. Stimpson.

Steam-engines and Boilers (Mechanical Engineering 6), five hours, at 10:15. Assistant Professor Corp.

Graphical Statics of Roofs and Mechanism (Mechanical Engineering 1), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professor Hood.

Shop Work 4, five hours, 1 to 6. Mr. Ward.

One technical report.

JUNIOR YEAR.

*First Term:*

Analytical Mechanics (Mechanics 1), five hours, at 9. Professor Marvin.

Theory of Electricity and Magnetism (Electrical Engineering 1), five hours, at 10:15. Professor Blake.

Thermodynamics (Mechanical Engineering 11), four hours, at 11:15. Associate Professor Hess.

Advanced English Composition (English 2), four hours, Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Assistant Professor Raymond.

Electrical Laboratory (Electrical Engineering 6), six hours, 2:30 to 5:30. Assistant Professor Rice.

Shop Work 5, five hours, 1 to 6. Mr. Ward.

*Second Term:*

Dynamo Machinery (Electrical Engineering 3), three hours, Monday, Wednesday, and Friday, at 11:15. Assistant Professor Rice.

Mechanics of Machinery (Mechanical Engineering 9), three hours, Monday, Wednesday, and Friday, at 8. Associate Professor Hess.

Theory of Alternating Currents (Electrical Engineering 2), five hours, at 9. Professor Blake.

Electrical Laboratory (Electrical Engineering 7), four hours, 1:30 to 5:30. Assistant Professor Rice.

Strength of Materials (Mechanics 2), four hours, at 10:15. Professor Marvin.

Testing Laboratory (Mechanics 3), Tuesday, Thursday, or Friday, 1:30 to 5:30, or Saturday, 8 to 12. Assistant Professors Hood and Corp.

Shop Work 6, five hours, 1 to 6. Mr. Ward.

One technical report.

SENIOR YEAR.

*First Term:*

Dynamo Machinery (Electrical Engineering 4), five hours, at 11:15. Assistant Professor Freeman.

Physical Chemistry (Chemistry 15), five hours, at 10:15. Assistant Professor Cady.

Dynamo Design (Electrical Engineering 5), three hours, Monday, Wednesday, and Friday, 8 to 10. Assistant Professor Freeman.

Machine Design (Mechanical Engineering 4), eight hours, Tuesday and Thursday, 1:30 to 5:30. Associate Professor Hess.

Electrical Laboratory (Electrical Engineering 8), six hours, 2:30 to 5:30. Assistant Professor Freeman.

Engineering Laboratory (Mechanical Engineering 13), four hours, Tuesday or Thursday. Assistant Professor Corp.

Electrical Society, once a week.

One technical report.

*Second Term:*

Mechanical Methods and Practice (Mechanical Engineering 12), (*a*), five hours, at 9. Mr. Ward.

Specifications and Contracts (Civil Engineering 4), (*b*), five hours, at 11:15. Professor Marvin.

Professional Thesis (Electrical Engineering 13), six hours, 2:30 to 5:30. Assistant Professor Freeman.

Two full terms' work to be chosen from any engineering or mathematical courses offered, subject to the approval of the department of electrical engineering. See especially courses 9, 10 and 11 in electrical engineering.

## Mechanical Engineering.

SOPHOMORE YEAR.

*First Term:*

Physics 4, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Mr. Stimpson.

Calculus B (Mathematics 7), three hours, Monday, Wednesday, and Friday, at 10:15 or 1:30.

Analytical Geometry B (Mathematics 6), two hours, Tuesday and Thursday, at 10:15 or 1:30.

Chemistry 2 B, lectures three hours and laboratory four hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.

Machine Drawing (Mechanical Drawing 6), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professor Hood and assistant.

Shop Work 3, five hours, 1 to 6. Mr. Ward.

One technical report.

*Second Term:*

Physics 5, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Mr. Stimpson.

Qualitative Analysis (Chemistry 3), lectures two hours and laboratory six hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.

Steam-engines and Boilers (Mechanical Engineering 6), five hours, at 10:15. Assistant Professor Corp.

Graphical Statics of Roofs and Mechanism (Mechanical Engineering 1), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professor Hood.

Shop Work 4, five hours, 1 to 6. Mr. Ward.

One technical report.

JUNIOR YEAR.

*First Term:*

Analytical Mechanics (Mechanics 1), five hours, at 9. Professor Marvin.

Mechanics of Machinery (Mechanical Engineering 8), three hours, Monday, Wednesday, and Friday, at 11:15. Assistant Professor Corp.

Dynamo Machinery (Electrical Engineering 14), five hours at 10:15. Assistant Professor Rice.

Advanced English Composition (English 2), four hours, Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Assistant Professor Raymond.

Electrical Laboratory (Electrical Engineering 6), three hours, 2:30 to 5:30. Assistant Professor Rice.

Engineering Laboratory (Mechanical Engineering 13), four hours, Tuesday or Thursday, 1:30 to 5:30. Assistant Professor Corp.

Shop Work 5, five hours, 1 to 6. Mr. Ward.

Mechanical Engineering Society, once a week.

*Second Term:*

Strength of Materials (Mechanics 2), four hours, at 10:15. Professor Marvin.

High-speed Steam-engines (Mechanical Engineering 2), six hours, Monday and Wednesday, 1:30 to 4:30. Associate Professor Hess.

Mechanical Methods and Practice (Mechanical Engineering 12), (*a*), five hours at 9. Mr. Ward.

Electric Light and Power Transmission (Electrical Engineering 12), five hours, at 8. Assistant Professor Freeman.

Testing Laboratory (Mechanics 3), four hours, Tuesday, Thursday, or Friday, 1:30 to 5:30, or Saturday, 8 to 12. Assistant Professors Hood and Corp.

Shop Work 6, five hours, 1 to 6. Mr. Ward.

Mechanical Engineering Society, once a week.

One technical report.

SENIOR YEAR.

*First Term:*

Mechanics of Fluids (Mechanics 4), (*a*), four hours, at 10:15. Assistant Professor Hubbard.

Hydraulic Machinery (Mechanical Engineering 10), (*b*), four hours, at 10:15. Associate Professor Hess.

Hydraulic Laboratory (Mechanics 5), Tuesday, Thursday, or Friday, 3:30 to 5:30. Assistant Professor Hood.

Thermodynamics (Mechanical Engineering 11), four hours, at 11:15. Associate Professor Hess.

Machine Design (Mechanical Engineering 4), eight hours, Monday and Wednesday, 1:30 to 5:30. Associate Professor Hess.

Kinematics (Mechanical Engineering 3), six hours, Monday, Wednesday, and Friday, 8 to 10. Associate Professor Hess.

Thesis Work (Mechanical Engineering 15), Friday, 1:30 to 5:30.

Mechanical Engineering Society, once a week.

One technical report.

*Second Term:*

Mechanics of Machinery (Mechanical Engineering), three hours, Monday, Wednesday, and Friday, at 8. Associate Professor Hess.

Specifications and Contracts (Civil Engineering 4), (*b*), five hours, at 11:15. Professor Marvin.

Metallurgy 2, five hours, 10:15. Assistant Professor McFarland.

Machine Design (Mechanical Engineering 5), eight hours, Tuesday and Thursday, 1:30 to 5:30. Associate Professor Hess.

Engineering Laboratory (Mechanical Engineering 14), four hours, Monday or Wednesday, 1:30 to 5:30. Assistant Professor Corp.

Thesis Work (Mechanical Engineering 13), Friday, 1:30 to 5:30. Associate Professor Hess.

Mechanical Engineering Society, once a week.

## Mining Engineering.

SOPHOMORE YEAR.

*First Term:*

Chemistry 2 B, lectures three hours and laboratory four hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.

Calculus B (Mathematics 7), three hours, Monday, Wednesday, and Friday, at 10:15 or 1:30.

Analytical Geometry B (Mathematics 6), two hours, Tuesday and Thursday, at 10:15 or 1:30.

Elementary Geology (Geology 1), lectures five hours, at 11:15. Professor Haworth.

Machine Drawing (Mechanical Drawing 6), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professor Hood.

Shop Work 3, five hours, 1 to 6. Mr. Ward.

Mining Journal Meeting, one hour.

One technical report.

*Second Term:*

Qualitative Analysis (Chemistry 3), lectures two hours and laboratory six hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.

Surveying (Civil Engineering 5), five hours, at 10:15, and fieldwork five hours. Assistant Professors Hoad and Hubbard.

Mineralogy (Mineralogy 1), lectures and laboratory work, ten hours, from 3:30 to 5:30. Assistant Professor Kay.

Topographical Drawing (Civil Engineering 1), four hours, Tuesday and Friday, 1:30 to 3:30. Assistant Professor Hubbard.

Mining Journal Meeting, one hour.

One technical report.

*Summer Vacation:*

Surveying (Civil Engineering 6), four weeks. Assistant Professors Hoad and Hubbard.

JUNIOR YEAR.

*First Term:*

Physics 4, lectures 4 hours, at 11:15, and laboratory two hours. Professor Blake and Mr. Stimpson.

Economic Geology (Geology 3), three hours, Monday, Wednesday, and Friday, at 9. Professor Haworth.

Mining 2, two hours, Tuesday and Thursday, at 9. Assistant Professor Crane.

Mining 1, five hours, at 8. Assistant Professor Crane.

Quantitative Analysis (Chemistry 7), lectures and laboratory work, ten hours, 3:30 to 5:30. Professor Bailey.

Shop Work 4, five hours, Saturday, 8 to 1. Mr. Ward.

Mining Journal Meeting, one hour.

One technical report.

*Second Term:*

Physics 5, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Mr. Stimpson.

Assaying and Metallurgical Analysis (Chemistry 11), ten hours, 8 to 10. Assistant Professor McFarland.

Mining 2, three hours, Monday, Wednesday, and Friday, at 10:15. Assistant Professor Crane.

Economic Geology (Geology 3), two hours, Tuesday and Thursday, at 10:15. Professor Haworth.

Mining Journal Meeting, one hour.

One technical report.

*Summer Vacation:*

Summer Excursion Work (Mining 7), four weeks. Professor Haworth and Assistant Professor Crane.

SENIOR YEAR.

*First Term:*

Mining 3, five hours, at 10:15. Assistant Professor Crane.

Advanced English Composition (English 2), four hours, Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Assistant Professor Raymond.

Metallurgy 1, five hours, at 11:15. Assistant Professor McFarland.

Mechanics 1, five hours, at 9. Professor Marvin.

Mining Journal Meeting, one hour.

*Second Term:*

Strength of Materials (Mechanics 2), four hours, at 10:15. Professor Marvin.

Testing Laboratory (Mechanics 3), Tuesday or Thursday, 1:30 to 5:30, or Saturday, 8 to 12. Assistant Professor Hood.

Mining 4, (*a*), five hours, at 11:15. Assistant Professor Crane.
Specifications and Contracts (Civil Engineering 4), (*b*), five hours, at 11:15. Professor Marvin.
Professional Thesis. Professor Haworth and Assistant Professor Crane.
Mining Journal Meeting.
Optional: Five hours for one term from any geological or engineering or mathematical subjects not taken in course. See especially metallurgy 2 and mining 5.

## Chemical Engineering.

SOPHOMORE YEAR.

*First Term:*

Physics 4, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Mr. Stimpson.
Chemistry 2 B, lectures three hours and laboratory four hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.
Calculus B (Mathematics 7), three hours, Monday, Wednesday, and Friday, at 10:15 or 1:30.
Analytical Geometry B (Mathematics 6), two hours, Tuesday and Thursday, at 10:15 and 1:30.
Machine Drawing (Mechanical Drawing 6), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professor Hood.
Shop Work 3, five hours, 1 to 6. Mr. Ward.
Chemical Club Meeting, Thursday, at 5.
One technical report.

*Second Term:*

Physics 5, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Mr. Stimpson.
Qualitative Analysis (Chemistry 3), lectures two hours and laboratory six hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.
Mineralogy (Mineralogy 1), ten hours, 3:30 to 5:30. Assistant Professor Kay.
Shop Work 4, five hours, 1 to 6. Mr. Ward.
Chemical Club Meeting, Thursday, at 5.
One technical report.

JUNIOR YEAR.

*First Term:*

Mechanics 1, five hours, at 9. Professor Marvin.
Advanced English Composition (English 2), four hours, Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Assistant Professor Raymond.

Quantitative Analysis (Chemistry 7), twenty hours, 1:30 to 5:30. Professor Bailey and Assistant Professor Curtis.

Chemical Club Meeting, Thursday, at 5.

*Second Term:*

Strength of Materials (Mechanics 2), four hours, at 10:15. Professor Marvin.

Testing Laboratory (Mechanics 3), four hours, Tuesday, Thursday, or Friday, 1:30 to 5:30, or Saturday, 8 to 12. Assistant Professors Hood and Corp.

Organic Chemistry (Chemistry 12), ten hours, 3:30 to 5:30. Associate Professor Bartow and Mr. Miller.

Assaying and Metallurgical Analysis (Chemistry 11), ten hours, 8 to 10. Assistant Professor McFarland.

Chemical Club Meeting, Thursday, at 5.

One technical report.

SENIOR YEAR.

*First Term:*

Physical Chemistry (Chemistry 15), five hours, at 10:15. Assistant Professor Cady.

And two of the following: (1) Mechanics 4, Mechanical Engineering 10, and Mechanics 5. (2) Civil Engineering 12 and 13. (3) Mechanical Engineering 11. (4) Electrical Engineering 14. (5) Mining Engineering 1. (6) Geology 1. (7) Chemistry 13, the College. (8) Chemistry 4, the College. (9) Metallurgy 1. (10) Mining 2 and Geology 3.

Chemical Club Meeting, Thursday, at 5.

One technical report.

*Second Term:*

Metallurgy 2, five hours, at 10:15. Assistant Professor McFarland.

Specifications and Contracts (Civil Engineering 4), (*b*), five hours, at 11:15. Professor Marvin.

Chemical Club Meeting, Thursday, at 5.

Thesis.

And one of the following: (1) Mining Engineering 2 and Geology 2. (2) Mineralogy 3 and Geology 4, the College. (3) Mechanical Engineering 7. (4) Chemistry 9, the College. (5) Chemistry 10, the College. (6) Chemistry 16, the College. (7) Chemistry 17, the College.

## Equipment.

**The Library.**—The scientific portion of the University library directly related to engineering contains about 12,000 volumes, while in the reading-room are found 285 American and foreign engineering and scientific journals.

**Engineer's Instruments.**—These comprise transits, levels, compasses, solar attachments, rods, chains, tapes, plane tables, heliotropes, current meter, aneroids, and other minor instruments. Among the above are a precise level for very accurate leveling, a secondary triangulation transit for topographical work, and an alt-azimuth instrument for use on primary triangulations, which has a ten-inch circle, read to single seconds of arc.

For the summer work in surveying a complete camping outfit is provided. Planimeters, Thatcher and Manheim slide rules and Colby's stadia slide rules are used for rapid calculation and estimation of quantities.

**Drawing-rooms.**—These are well lighted and provided with tables. They are furnished with many photographs of actual constructions and the cases contain large numbers of blue-prints of working-drawings for bridges, railways, sewers, machinery, etc.

## Laboratories.

The School of Engineering is well equipped with apparatus of modern pattern from the best makers.

**Physical Geology and Mining.**—The department of physical geology and mining possesses a large collection of minerals and samples of rocks which are of economic value, and the necessary apparatus for their examination and identification.

The ore-dressing laboratory, located in the west basement of the Chemistry Building, contains stamps, jigs, crushers, screens (power and hand), hydraulic classifiers, spitz kasten and spitz lutte, an automatic ore-feeder, a slime table, a pulverizer, besides facilities for panning, vanning and sampling ores. It affords opportunities for practical training in making laboratory and field tests on ores. This work is supplemented by the mining museum, which contains a collection of implements and apparatus used in mining and milling operations, as well as models illustrating methods and processes.

**Civil and Municipal Engineering.**—In the testing laboratories are found an Olsen universal machine of 100,000 pounds capacity. a 50,000-pound torsion machine of the same make, a 50,000 pound

transverse machine, which has been built in the Fowler Shops, a standard rattler for the testing of paving brick, together with scales, tools and appliances for making accurate tests of all kinds of materials. One room is devoted to the testing of hydraulic cements, and is equipped with an Olsen machine of 2000 pounds capacity, and an automatic shot machine of 1000 pounds capacity, convenient tables and racks, and a fair amount of accessory apparatus.

The hydraulic laboratory contains a measuring pit, a large steel orifice tank for experimentation with jets, a triplex power pump, a centrifugal pump, pipe-lines, weir-boxes, gages, a Venturi meter with manometer, a Pelton water motor, etc., arranged to illustrate the laws of fluid motion, and affording some opportunity for testing hydraulic machinery.

**Mechanical Engineering.** For mechanical engineering, space is allotted in the two laboratory rooms in the east end of the Fowler Shops for experimental work, including calibration of engineering instruments, some of the minor experiments on steam and dynamometer testing. In one room there are installed complete Westinghouse and New York air-brake equipments, which serve to illustrate the use of the air-brake in train service and to provide a supply of compressed air for experimental purposes and for operating compressed-air-driven tools and appliances. A six-horse-power Foos gasoline engine is arranged for complete tests, using either gas or gasoline. Arrangements are provided for measuring the fuel, water and air supply, and the heat given to jacket, water, and exhaust. An adjustable fan blower is used as a constant load for testing.

In the west end of Fowler Shops, in close connection with the large battery of boilers, space is provided for steam-engineering work. Here is a special boiler suited to testing purposes. Two small engines are used for engine experiments, and pumps, injectors, gages, calorimeters, separators, pyrometers, flue-gas apparatus and other accessories are provided. Arrangements are provided for making tests of various makes of injectors and separators.

The University power-house equipment is also available for boiler and engine tests.

Recent donations have been received of a large Tobey natural-gas meter from the Metric Metal Company, a Milwaukee separator from the Steam Appliance Company, valuable sets of blue prints from the B. F. Sturvevant Company, the Watertown Engine Company, and the Ball Engine Company, and numerous photographs of conveying machinery from the C. W. Hunt Company.

**Electrical Engineering.**—The dynamo-laboratory equipment consists of two D. C. Crocker Wheeler 3-horse-power motors, pro-

vided with separate shunt and series field spools, two General Electric double-current generators, 7½ K. W., tapped on the alternating current end for two-phase, three-phase or single-phase current at sixty cycles, a General Electric special laboratory machine, rated 7½ K. W., consisting of a stationary armature, wound six-phase, and provided with a revolving field and three different types of induction motor rotors. There is also a Westinghouse 2-horse-power, three-phase motor, Fort Wayne self-starting synchronous motor, and a number of small D. C. motors.

The machinery of the laboratory in run from a line shaft by a 15-horse-power Siemens and Halske motor. The laboratory is provided with a good assortment of Weston, Whitney and Thompson volt, ampere and watt meters, and auxiliary apparatus, such as resistances, reactances, transformers, etc.

**Chemical Engineering.**—The chemical laboratory contains separate rooms for general chemistry, qualitative analysis, quantitative analysis, physical chemistry, and assaying. There are abundant specimens and samples of chemical products to use for illustration. On physical chemistry, especially, the instruments for electrical measurements are of the newest designs and greatest accuracy. The department also has a liquid-air machine, so that experiments can be carried on at low temperatures. The assay-room is provided with the usual furnaces, muffles, etc., for the complete assay of metallurgical products.

**The Fowler Shops.**—This building contains in the boiler-room two Erie City return-flue, 16′ x 66″ high-pressure boilers; also the present equipment of the experimental steam-engineering laboratory described above. Adjoining is the engine-room, in which is a Russell four-valve, medium-speed engine of 150 horse-power, and also a 75-horse-power Ball, high-speed, self-oiling engine. Both these engines are fitted with indicator connections and reducing gears. These two couple conjointly or independently on a short main-line shaft, from which are run the various power and lighting generators. These at present consist of one 1000-volt, 60 K. W., General Electric alternator; one 65 K. W., Siemens and Halske, D. C., 125 volts; one 17½ K. W., General Electric, D. C., 125 volts; one T. H., 50-light arc. Some sixteen independent circuits run from a central switch-board to various buildings and laboratories of the University, so that varieties of currents are always available. In the engine-room is also a Cookson feed-water heater, Cochran separators for each engine, and a Lyman exhaust head. Here, also, are installed a duplex 18″ x 12″ x 10″ steam fire-pump, and a 7½″ x 5″ x 8″ steam service pump for the water-supply of the University, and an exhaust-steam-heating equip-

ment for heating the building. The forge-room, 50′ x 40′, contains twelve Sturtevant down-draft forges, with anvils and all usual smithing tools; there are also provided one large forge and a Little Giant power trip-hammer for heavier work.

The metal-working room, which is 80′ x 50′, has 160 feet of benches, with twenty vises and usual bench tools. There are, at present, ten 14″ x 6′ Standard engine-lathes; one 18″ x 12′ Challenge engine-lathe, with all attachments; one crank shaper; one 25″ Challenge drill-press, with back gear and self feed; one universal cutter and reamer grinder; one 20″ drill press, with hand feed; one 1½″ bolt cutter; one universal milling-machine, with spiral gear-cutter, and vertical and all other attachments—all the above made by the American Tool Works Company, Cincinnati, Ohio. Also, one 26″ x 26″ x 7′ Gray planer; one 18″ x 8′ boring lathe; and two 20″ drill-presses, with power feed. There are also power hack-saws, dry and wet grinders, grindstones, etc., usually found in well-equipped shops. The line shafting is divided independently into three sections by friction-clutch couplings, and is run by a Westinghouse four-pole, 15-horse-power motor. The tool-room, under care of an attendant, is well furnished with small tools and supplies, which are delivered to students on the check system. This room also containes a 14″ x 5′ Challenge engine-lathe with draw-bar chucks, and a power drill, both made by the American Tool Works Company, a Yankee drill-grinder, all run by an electric motor. Two 14″ x 6′ engine-lathes, American Tool Works Company design, have been recently constructed by students as regular course work, and as additions to equipment. An electric freight elevator connects with the wood-working room above. This latter room, 80′ x 50′, contains one 12″ x 6′ speed lathe; one 18″ x 12′ pattern-maker's lathe, with iron shears and traveling slide rest and cross-feed; also floor stand and rear face plate; one scroll-saw; one combination cross-cut and rip-saw with jointer head and boring attachment; one miter saw and universal trimmer; nine double benches with tail vises and stops, and full sets of pattern-making tools for each; six Richardson iron-body, 11″ x 28″ speed lathes, with full set of tools. A seven-foot face-plate lathe, a disc sandpapering machine and a boring-machine have been built by the students and added to the equipment. The shafting is run by electric motor. Opening from this is a wash-room, 40′ x 20′, with stone floor, and 270 lockers. In the various benches are also 275 drawers, reserved, with the lockers, for the students' use. On this floor is also the dynamo laboratory, 40′ x 50′. In this, at present, is a central line shaft, operated at constant speed by a Siemens and Halske 15-horse-power motor. Split-wood pulleys of assorted diameters allow a great range of speed for

motors and generators used for experimental study. Two standard Crocker Wheeler, 2½ K. W., D. C. machines, with removal coils for shunt, series and compound winding, serve for D. C. experiments. There are also a 2½ K. W., single-phase, rotary transformer; one 3½ K. W., two-phase generator; and one 4½ K. W., 125 V., compound multipolar, D. C. generator; one 2 K. W., three-phase Westinghouse induction motor; one 7½ K. W., one-, two- and three-phase G. E. rotary converter; several 1000-volt transformers of various types.

## Courses of Instruction.

All courses that are given in the first half of any term are indicated by (*a*); those occurring in the second half of any term by (*b*). The statement of hours refers to the number of hours per week.

### CHEMISTRY.

Professor Bailey.
Associate Professor Bartow.
Assistant Professor Cady.
Assistant Professor McFarland.
Mr. Miller.
Mr. Faragher.

2 B.—Inorganic Chemistry. Lectures, recitations, and laboratory work. Required in Engineering School, Sophomore. 1st term, lectures three hours and laboratory four hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.

3.—Qualitative Analysis. Lectures and laboratory work. Bailey and Cady's Guide to the Study of Qualitative Analysis. Must be preceded by course 2 B. Required in the Engineering School, Sophomore. 2d term, lectures two hours and laboratory six hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.

7.—Quantitative Analysis. Lectures and laboratory work. Newth's Quantitative Analysis. Must be preceded by course 3. Required of chemical and mining engineers. 1st term, ten hours, 1:30 to 3:30, or 3:30 to 5:30; Professor Bailey. Or 2d term, ten hours, 8 to 10. Associate Professor Bartow.

11.—Assaying and Metallurgical Analysis. This is a course in the volumetric analysis of the ores of copper, iron, zinc, manganese, etc., followed by the analysis of bullion. During the first half of the term the time will be occupied with the fire essay of the ores of gold, silver, and lead. Lectures and laboratory work. Furman's Manual of Practical Assaying. Must be preceded by course 7 and mineralogy 1. Required of chemical and mining engineers, Junior. 2d term, ten hours, 8 to 10, and by appointment. Assistant Professor McFarland.

12.—Organic Chemistry. A study of the hydrocarbons and their derivatives. Lectures, recitations, and laboratory work. Must

be preceded by course 1. Required of chemical engineers, Junior. 2d term, ten hours, 3:30 to 5:30. Associate Professor Bartow and assistants.

15.—Physical Chemistry. A course paying special attention to electrochemistry. Lectures and laboratory work. Must be preceded by chemistry 7, or by chemistry 2 B and physics 4 and 5 and mathematics 7. Required of chemical engineers and electrical engineers. Optional for mining engineers. 1st term, five hours, at 10:15. Assistant Professor Cady.

Other courses in chemistry (the College) are open as optionals to chemical engineers.

## CIVIL ENGINEERING.

Professor Marvin.
Assistant Professor Hoad.
Assistant Professor Hubbard.

1.—Topographical Drawing. A study of and practice in the conventional methods of representing topography, coupled with the platting of the results of field-practice in connection with surveying. Required of Sophomore civil and mining engineering students. 2d term, six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hubbard.

2.—Railway Drawing. Railway plats, profiles and plans for track and small structures. Lectures and drawing-room practice in tracing and blue-printing and in platting the results of field-work. Required of civil engineering students. Junior, 1st term, six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hoad.

3.—Graphical Statics. The properties of equilibrium polygons and other methods of representing the action of forces, with application to the determination of stresses in beams, roof trusses, and stone arches. Lectures and drawing. Required of civil engineering students. Junior, 2d term, six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hoad.

4.—Contracts and Specifications. An elementary course on the law of contracts, with special reference to engineering practice. The technical features of specifications. Methods of procedure in letting and conducting contract work, and the engineer's relation thereto. Required of all engineering students. Senior, 2d term, (*b*), five hours, at 11:15. Professor Marvin.

5.—Surveying. Engineer's instruments, their construction and adjustment. Methods of making and platting land, topographic, mining and hydrographic surveys. Sources of error and the means

of controlling the precision of field-work. Leveling and earthwork. Required of civil and mining engineering students. Sophomore, 2d term, five hours, at 10:15, with one half-day per week in field-practice. Assistant Professors Hoad and Hubbard.

6.—Summer Field-work. Courses in practical surveying. The character of the work done will vary somewhat from year to year, depending upon the make-up of the body of students that go into camp. Small parties of three or four each are formed, and some of these are engaged in making topographical surveys of tracts of about one square mile each, laying out triangles and reading angles, leveling between stations, running stadia traverses, platting results, and drawing a contour map. Other parties may be engaged in laying out a short line of railway, in running precise levels, making a hydrographic survey, or gaging the flow of the Kansas river. All parties camp together. Required of Sophomore civil and mining engineering students and Junior civil engineering students. Ten hours per day for one month, at the close of the college year, in June. Assistant Professors Hoad and Hubbard.

7.—Hydraulic Cement. A laboratory course in testing hydraulic cements and making comparison of their qualities. Reading, experimental work, and reports of tests made. Required of civil engineering students. Senior, 2d term, four hours, Tuesday and Thursday, 3:30 to 5:30. Assistant Professor Hubbard.

8.—Masonry. Character of materials composing masonry. Methods of cutting and dressing stone. Foundations: Cribwork, cofferdams, caissons, piles and pile-driving, concrete, pneumatic processes, etc. Masonry structures: Culverts, arches, piers, abutments, bridges, etc.; their form, construction, strength, and cost. Compound arches of concrete and metal. Recitations and lectures. Required of civil engineering students. Senior, 1st term, (*b*), five hours, at 9. Assistant Professor Hubbard.

9.—Roads and Pavements. A study of the materials for and methods used in the construction and improvement of country roads and city pavements. Earthwork, drainage, the road foundation, the wearing surface, etc. Principles governing the location of roads. The economic importance of the "good-roads movement." Required of civil engineering students. Junior, 2d term, two hours, Tuesday and Thursday, at 9. Assistant Professor Hoad.

10.—Railway Location. The principles involved in an economic location and construction of railways. Analysis of traffic and operating expenses. The influence of proposed changes in location upon the amount of total revenue from traffic, the bonded debt and the corresponding fixed charges for interest, the operating expense, and

the dividend-paying capacity of the road. Methods of conducting field-work for preliminary and location surveys. Required of civil engineering students. Junior, 2d term, three hours, Monday, Wednesday, and Friday, at 9. Assistant Professor Hoad.

11.—Railway Surveying. A study of the methods of laying out and constructing railways. The setting out of simple and compound curves and calculation of excavation and embankment. Yards, turnouts, and switches. Easement curves of various types. Calculation of waterways, and methods of staking out foundations for culverts and bridges. This course must be preceded by a general course in surveying. Optional for Senior mining engineers. Required of civil engineering students. Junior, 1st term, five hours, at 10:15, with field-practice one-half day per week. Assistant Professors Hoad and Hubbard.

12.—Sanitary Engineering. The collection, removal and disposal of sewage by various methods. Water-carriage and pneumatic systems. Separate and combined systems. The construction of sewers, outfalls, manholes, and flushing appliances. Ventilation of sewers. Treatment of sewage. The collection and disposal of garbage and other refuse. Garbage destruction and utilization. Street cleaning. Required of civil engineering students. Senior, 1st term, (*a*), five hours, at 11:15. Assistant Professor Hoad.

13.—Sanitary Engineering. Water-supply. The requisites of a supply as to quality and quantity. The value of chemical and biological analyses and the interpretation of results. Relation of water-supply to the public health. Rainfall and the gathering and storage of surface-water. The collection of ground-water. The use of rivers and lakes as sources of supply. Distributing systems; conduits and pipe-lines, pumping machinery, the flow of water in open channels and closed conduits. The construction of dams and reservoirs. The purification of water. Methods of maintaining the efficiency of existing plants. Required of civil engineering students. Senior, 1st term, (*b*), five hours, at 11:15. Assistant Professor Hoad.

14.—Roofs and Bridges. Analytical and graphical calculation of stresses in framed structures under various forms of loading. This course must be preceded by course 2 in mechanics. Required of civil and mechanical engineering students. Senior, 1st term, ten hours, 1:30 to 3:30. Professor Marvin.

15.—Bridge Designing. A study of bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course 14. Required of civil engineering students. Senior, 2d term, ten hours, 1:30 to 3:30. Professor Marvin.

19.—Sanitary Engineering. A course designed to follow 12 and 13. Lectures, recitations, and reading. Optional for Seniors. 2d term, five hours. Assistant Professor Hoad.

## ELECTRICAL ENGINEERING.

Professor Blake.
Assistant Professor Rice.
Assistant Professor Freeman.

Courses 1 to 8, inclusive, 11 and 13 are required of electrical engineering students. Courses 12 and 14 are required of mechanical engineering students. Courses 9 to 11, inclusive, and 15 are optionals for electrical engineering students.

1.—Theory of Electricity and Magnetism. A mathematical treatment of the general principles involved in direct-current devices and introductory to their application in direct-current machinery. Junior, 1st term, five hours, at 10:15. Professor Blake.

2.—Theory of Alternating Currents. A mathematical treatment of the general principles involved in alternate-current phenomena and introductory to their application in polyphasal machinery. Junior, 2d term, five hours, at 9. Professor Blake.

3.—Dynamo Machinery. Theory and fundamental types of direct-current generators and motors. Junior, 2d term, three hours, at 11:15. Assistant Professor Rice.

4.—Dynamo Machinery. Theory and general types of alternating-current generators and motors. Senior, 1st term, five hours, at 11:15. Assistant Professor Freeman.

5.—Dynamo Design. Practical calculations and details of construction, together with working-drawings for selected types of generators and motors. In addition to general classroom work, each student will prepare one or more special designs, which may afterward be constructed in the shops. Senior, 1st term, ten hours, 8 to 10:15. Assistant Professor Freeman.

6.—Electrical Laboratory. Junior, 1st term, six hours, 2:30 to 5:30. Assistant Professor Rice.

7.—Electrical Laboratory. A continuation of course 6. Junior, 2d term, four hours, 1:30 to 5:30. Assistant Professor Rice.

8.—Electrical Laboratory. Senior, 1st term, six hours, 2:30 to 5:30. Assistant Professor Freeman.

9.—Electric Lighting. Senior, 2d term, (*a*), five hours, at 11:15. Assistant Professor Freeman.

10.—Electric Power Transmission. Senior, 2d term, (*b*), five hours, at 11:15. Assistant Professor Freeman.

11.—American Telephone Practice. Senior, 2d term, (*a*), five hours, at 9. Assistant Professor Freeman.

12.—Electric Light and Power Transmission. A brief course. Required of mechanical engineering students. Junior, 2d term, five hours, at 8. Assistant Professor Freeman.

13.—Professional Thesis. Senior, 2d term, six hours, 2:30 to 5:30. Assistant Professor Freeman.

14.—Dynamo Machinery. A briefer course than 3 or 4, covering both direct- and alternating-current machines. Must be preceded by physics 4 and 5 and calculus. Junior, 1st term, five hours, at 10:15. Assistant Professor Rice.

15.—Electro-technical Literature. Senior, 2d term (*b*), five hours, at 9. Assistant Professor Freeman.

## ENGLISH LANGUAGE AND RHETORIC.

Assistant Professor Raymond.
Miss Gardner.

1.—Rhetoric and English Composition. Outlines of rhetoric' with exercises and themes. Required of all Freshmen. 1st or 2d term, five hours: 1st term at 8, 9, 4:30, and at other hours to be arranged; 2d term, at 8, 9, 3:30, and at other hours to be arranged. Miss Gardner and assistants.

2.—Advanced English Composition. Study of the principles of discourse, with special reference to the forms used in engineering work, with exercises. Required of Juniors or Seniors in the School of Engineering. 1st term, four hours: Lectures Tuesday and Thursday, at 8; conferences Wednesday and Friday, at 8. Assistant Professor Raymond.

## GEOLOGY.

Professor Haworth.

1. Elements of Physical Geology. A study of the elementary principles of general geology, including physical conditions throughout geologic time and the formation of continents; nature and origin of the different kinds of rocks and the rock-forming materials; the destructive process of erosion or denudation, and the economic products obtained from the ground by the various mining operations. Required of Junior civil and Sophomore mining engineers. 1st term, lectures, five hours, at 11:15. Professor Haworth.

3.—Economic Geology. A general study of the metallic and non-metallic products of the mine, quarry, and well, considered from a scientific and a practical standpoint, including the nature, origin,

amount and geographic and geologic distribution of the same. Must be preceded by course 1, or mineralogy 1. Required of Junior mining engineers. 1st term, lectures and library work, three hours, Monday, Wednesday, and Friday, at 9; 2d term, two hours, Tuesday and Thursday, at 10:15. Professor Haworth.

Other courses in geology (the College) are open as optionals to engineering students. For details see the courses in College section of this catalogue.

## MATHEMATICS.

Professor Miller.
Associate Professor Newson.
Assistant Professor Van der Vries.
Assistant Professor Ashton.
Mr. Shiek.

2.—College Algebra. Rapid review of exponents, radicals, and quadratic equations; graphic representation; complex numbers; logarithms; determinants; theory of equations; numeral equations of higher degree. Required of all Freshmen in the School of Engineering. Wentworth's College Algebra, revised edition. Both terms. 1st term, eight sections, three hours, Monday, Wednesday, and Friday, at 8, 9, 10:15, 11:15, or 3:30; 2d term, three sections, three hours, Monday, Wednesday, and Friday, at 8 or 3:30.

3.—Plane Trigonometry. The six trigonometric functions; principal formulas of plane trigonometry; solution of triangles and practical problems. Required of all Freshmen in the School of Engineering. Miller's Trigonometry. Both terms. Tuesday and Thursday. 1st term, eight sections, two hours, at 8, 9, 10:15, 11:15, or 3:30; 2d term, three sections, two hours, at 8 or 3:30.

4.—Analytical Geometry I. The straight line and circle; loci problems. Required of all Freshmen in the School of Engineering. Ashton's Analytic Geometry. Both terms. Tuesday and Thursday. 1st term, two sections, two hours, at 9 or 2:30; 2d term, five sections, two hours, at 8, 9, 10:15, 2:30, or 3:30.

5.—Calculus I. Differential calculus; fundamental principles; derivatives; applications to geometry and mechanics; maxima and minima; indeterminates; series. Required of all Freshmen in the School of Engineering. Granville's Calculus. Both terms. Monday, Wednesday, and Friday. 1st term, two sections, two hours, at 9 or 2:30; 2d term, five sections, two hours, at 8, 9, 10:15, 2:30, or 3:30.

6.—Analytical Geometry II. Conic sections; higher plane curves; solid analytics. Required of all Sophomores in the School of

Engineering. Ashton's Analytic Geometry. Both terms. Tuesday and Thursday. 1st term, three sections, two hours, at 10:15 or 1:30; 2d term, two sections, two hours, at 9 or 2:30.

7. Calculus II. Integral calculus; integration; definite integrals; applications to lengths, areas, and volumes. Required of all Sophomores in the school of Engineering. Granville's Calculus. Both terms. Monday, Wednesday and Friday. 1st term, three sections, three hours, at 10:15 or 1:30; 2d term, two sections, three hours, at 9 or 2:30.

## MECHANICS.

Professor Marvin.
Assistant Professor Hood.
Assistant Professor Hubbard.
Assistant Professor Corp.

1.—Mechanics. A study of the laws of statics and dynamics. Action of forces upon bodies and the resulting motions. Required of all engineering students. Senior for mining engineers, Junior for all others. 1st term, five hours, at 9. Professor Marvin.

2.—Strength of Materials. The theory of resistance to stress and applications to engineering construction. Required of all engineering students. Senior for mining engineers, Junior for all others. 2d term, five hours, at 10:15. Professor Marvin.

3.—Testing of Materials. A laboratory course to accompany course 2. The testing of iron, steel, wood and other materials of construction for resistance to tension, compression, torsion, bending, and shearing. Experimental determination of the limits of safe loading. The testing of paving brick. For all engineering students. Senior for mining engineers, Junior for all others. 2d term, four hours, Tuesday, Thursday, Friday, or Saturday. Assistant Professors Hood and Corp.

4.—Hydraulics. A study of the laws governing the pressure and flow of liquids and gases and the force of and resistance to their motion. Required of civil and mechanical and optional for mining engineering students. Senior, 1st term, (*a*), four hours, at 10:15. Assistant Professor Hubbard.

5.—Hydraulic Laboratory. A course to accompany course 4 and the course in hydraulic machinery. Experimental work with the flow of water over weirs, through orifices and pipes, and in testing hydraulic machinery. Required of civil and mechanical engineering students. Senior, 1st term, two hours, Tuesday, Thursday, or Friday. Assistant Professor Hood.

6.—Elementary Mechanics. An elementary course, requiring

a knowledge of elementary physics and trigonometry. Freshman, 2d term, two hours, Tuesday and Friday, at 8, 9, or 4:30. Assistant Professor Hood and assistants.

## MECHANICAL DRAWING.

Assistant Professor Hood.
Assistant Professor Hubbard.
Assistant Professor ——.

1.—Free-hand Drawing. Outline drawing with lead pencil. Drawing of simple geometrical figures for hand and eye training. Drawing from the object, teaching accuracy in observation. Required of all engineering students. Freshman, 1st six weeks of 1st term, six hours. Assistant Professor Hood and assistant.

2.—Elementary Mechanical Drawing. Accurate drawing of geometrical figures, teaching proper use of instruments. Drawing-board constructions for conic sections and other plane curves. Standard forms of lettering for titles. Continual practice in single-stroke free-hand lettering for notes on drawings. Required of all engineering students. Freshman, 1st fourteen weeks of 1st term, six hours. Assistant Professor Hood and assistant.

3.—Descriptive Geometry. Church's Descriptive Geometry. Execution of a number of original exercises. Required of all engineering students. Freshman, 2d term, three hours, Monday, Wednesday, and Friday, at 8, 9, or 4:30. Assistant Professor Hood and assistants. Also given in the 1st term, for fall of 1905, five hours, at 8. Mr. ——

4.—Projection Drawing. Construction of problems in projection, sections, intersection of surfaces, development of surfaces, isometric drawing. Dimensioning of drawings with special reference to methods used in practice. Parallel with course 3. Required of all engineering students. Freshman, 2d term, six hours. Assistant Professor Hood and assistants.

5.—Shades, Shadows, and Perspective. Construction and rendering of drawings in projection, showing shades and shadows. Elements of perspective. Construction of perspective drawings from given dimensions. Required of civil engineering students. Sophomore, 1st term, six hours. Assistant Professor Hubbard.

6.—Machine Drawing. Free-hand working sketches from machine parts and assembled machines; working-drawings from these sketches in accordance with approved practice. Detailing from assembled drawings. Tracing and blue-printing. Lectures on drafting-room methods. Required of electrical, mechanical, mining and chemical engineering students. Sophomore, 1st term, six hours. Assistant Professor Hood and assistant.

## MECHANICAL ENGINEERING.

Associate Professor HESS.
Assistant Professor HOOD.
Assistant Professor CORP.
Mr. WARD.

All courses are required of mechanical engineering students. Courses 1, 4, 6, 9, 12 and 13 are required of electrical engineering students. Course 7 is required of civil engineering students.

1.—GRAPHICS. Graphical analysis of stresses in roof trusses, followed by graphical statics of machines. Texts, Merriman's Roofs and Bridges, vol. II, and Hermann-Smith's Graphical Statics of Mechanisms. Sophomore, 2d term, six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professor Hood.

2.—HIGH-SPEED STEAM-ENGINE. Dynamics and design of an engine. Text, Klein's Steam-engine. Junior, 2d term, six hours, Monday and Wednesday, 1:30 to 4:30. Associate Professor Hess.

3.—KINEMATICS. Text, Barr's Kinematics of Machinery. Senior, 1st term, six hours, Monday, Wednesday, and Friday, 8 to 10. Associate Professor Hess.

4.—MACHINE DESIGN. Each student will complete the design and working-drawings of a machine selected by himself, such as a punch, shear, riveter, hoist, crane, pump, or special tool. Senior, 1st term, eight hours, Monday and Wednesday, 1:30 to 5:30. Associate Professor Hess.

5.—MACHINE DESIGN. Continuation of course 4. Senior, 2d term, eight hours, Tuesday and Thursday, 1:30 to 5:30. Associate Professor Hess.

6.—BOILERS AND STEAM-ENGINES. Boilers—combustion of fuels, incrustation, care, accessory apparatus, and construction. Text, Peabody and Miller's Steam-boilers. Steam-engines—types of engines; indicator and cylinder analysis; valves, governors, and accessories. Text, Ripper's Steam-engine Theory and Practice. Required of electrical and mechanical engineering students. Sophomore, 2d term, five hours, at 10:15. Assistant Professor Corp.

7.—ENGINES AND BOILERS. Types of engines; valve motions; governors; dynamics of moving parts; indicator and cylinder analysis; accessories and connections. Boilers—general construction, care, and management; accessory apparatus; fuels. Lectures, recitations, and five half-days in the engineering laboratory. Texts, Ripper's Steam-engine Theory and Practice and Peabody and Miller's Steam-boilers. Must be preceded by physics 1 and 2. Required

of civil engineering students. Junior, 2d term, five hours, at 11:15. Associate Professor Hess.

8.—Mechanics of Machinery; Machinery of transmission. Lectures and recitations. Text, Jones's Machine Design, vol. II. Junior, 1st term, three hours, Monday, Wednesday, and Friday, at 11:15. Assistant Professor Corp.

9.—Mechanics of Machinery; with special reference to air-compressors, gas-engines, refrigerating-machines, and steam-turbines. Lectures and recitations. Senior, 2d term, three hours, Monday, Wednesday, and Friday, at 8. Associate Professor Hess.

10.—Hydraulic Machinery. Study of hydraulic engines, water-wheels, turbines and impulse wheels, pumps and rams, elevator machinery, and special applications of hydraulic power. Senior, 1st term, (*b*), four hours, at 10:15. Text, Barr's Pumping Machinery. Associate Professor Hess.

11.—Thermodynamics. Study of the relations of heat phenomena. Theory of gases and vapors. Theory of heat engines and discussion of heat efficiencies. Must be preceded by physics 1 and 2 and calculus. Lectures, recitations, and problems. Texts, Reeves's Thermodynamics, and Spangler's Notes on Thermodynamics. Senior, 1st term, four hours, at 11:15. Associate Professor Hess.

12.—Mechanical Methods and Practice. Lectures and notes on points of modern practice in connection with the use of tools; setting, adjustment and care of machines; shafting and belting, valve-setting, etc. Junior or Senior, 2d term, (*a*), five hours, at 9. Mr. Ward.

13.—Engineering Laboratory. Measurement of engine clearance, valve-setting, determination of mechanical efficiency and steam consumption of engines at various loads; calorimetry and separator tests; boiler tests; thermodynamic analysis of indicator diagrams and transfer of same to entropy chart. Juniors in mechanical engineering taking this course will omit exercises requiring the use of thermodynamics. Junior mechanical and Senior electrical, 1st term, four hours, 1:30 to 5:30. Assistant Professor Corp.

14.—Advanced Engineering Laboratory. Thermal analysis of gas-engines and air-compressors, coal, calorimetry, flue-gas analysis, and complete analysis of power-plant efficiency, with a view to fuel economy and smoke prevention. Senior, 2d term, four hours, 1:30 to 5:30. Assistant Professor Corp.

15.—Thesis Work. Four hours, 1:30 to 5:30. Associate Professor Hess.

## METALLURGY.

Assistant Professor McFARLAND.

1 A.—METALLURGY OF LEAD, ZINC, AND COPPER.. Study of principal ores and properties of these metals. Methods of extraction and refining. Required of mining engineers, Senior; optional for chemical engineers, Senior. 1st term, (*a*), 5 hours, at 11:15. Assistant Professor McFarland.

1 B.—METALLURGY OF SILVER, GOLD, MERCURY, AND TIN. Study of principal ores and methods of extraction. Amalgamation, chlorination and cyanide processes. Pyritic smelting, etc. Required of mining engineers, Senior; optional for chemical engineers, Senior. 1st term, (*b*), 5 hours, at 11:15. Assistant Professor McFarland.

2 A.—GENERAL METALLURGY. Properties of metals and alloys, metallurgical terms and processes, furnace types, refractory materials and slags, fuels and thermal measurements, calculation of furnace charges, etc. Required of chemical and mechanical engineers, Senior. 2d term, (*a*), 5 hours, at 10:15. Assistant Professor McFarland.

2 B.—METALLURGY OF IRON AND STEEL. Study of iron and its ores; methods for manufacture of pig iron and wrought iron. Manufacture of steel by crucible, Bessemer and open-hearth processes; special steels and special processes. Heat treatment and metallography of steel. Required of mechanical and chemical engineers, Senior; optional for mining engineers, Senior. 2d term, (*b*), 5 hours, at 10:15. Assistant Professor McFarland.

## MINING ENGINEERING.

Professor HAWORTH.
Assistant Professor CRANE.

COURSES FOR UNDERGRADUATES ONLY.

1.—MINING. (*a*) *Excavating, Boring, Blasting, and Surveying.* Excavation: Excavation of various kinds of earth, such as soils, clays, sands, and rocks, with or without ground-water; quarrying stone, etc., with various kinds of tools and machinery employed for same. Boring: Methods and appliances for prospect drilling and for drilling oil-wells and gas-wells, including different varieties of tools and machinery employed, difficulties to be encountered, and conditions under which prospect boring or drilling is profitable. Blasting: A study of the various kinds of explosives used in mining and excavating, such as black powder and the various kinds of the nitroglycerines and other explosives, including their manufacture and modes of use, and precautions necessary in hand-

ling them. Mine surveying: General principles of underground surveying and relation between underground and surface surveys; the construction of mine maps and mine sections, and measurements required in connection with contracts and location of new works. To be supplemented by field-work during summer vacation.

(*b*) *Shafting, Tunneling, and Mine Support.* Shafting: Shaft sinking; methods employed in sinking shafts through soft and hard materials, dry or water-bearing, including the hoisting and handling of excavated material, and methods of shaft timbering and shaft lining. Tunneling: Methods of driving tunnels through different kinds of earth and rock, including drainage and ventilation, tunnel supports and linings, and methods of choosing locations for tunnels. Mine supports: Including a general study of the various methods of supporting all forms of underground openings by timbers, masonry, metallic linings, and other methods peculiarly adaptable to special conditions. Required of mining engineering students. Senior, 1st term, five hours, at 8. Assistant Professor Crane.

2.—Ore Dressing. General methods and theories for separating different ores from foreign materials and for washing coals, clays, and other products. It includes a study of hand dressing, crushing, screening, and jigging, and a study of the machinery for the same; the concentration of slimes; milling methods for gold and silver ores. Lectures and laboratory work. Required of mining engineering students. Junior, 1st term, two hours, Tuesday and Thursday, at 9; 2d term, three hours, Monday, Wednesday, and Friday, at 10:15. Assistant Professor Crane.

3.—Mine Plant; Mine Constructions. (*a*) *Mine Plant.* A study of the various kinds of machinery employed in mine development and mine operation, and methods of placing the same, including machinery required for drilling, blasting, hoisting, drainage, and mine ventilation; and a study of large mining plants in the United States and abroad. Required of mining engineering students. (*b*) *Mine Constructions.* Building materials, foundations, mine building and constructions, with special reference to mine work. Required of mining engineering students. Senior, 1st term, five hours, at 10:15. Assistant Professor Crane.

4.—Prospecting, Exploring, Developing, and the Exploitation of Mineral Properties. A study of the nature and origin of metalliferous deposits and other valuable mining materials; the best methods of prospecting, developing and working the same. Required of mining engineering students. Senior, 2d term, (*a*), five hours, at 11:15. Assistant Professor Crane.

5.—Mine Engineering—Extraction, Drainage, and Ventilation. Extraction: Machinery and methods used in handling minerals on the surface and under ground; tramways, cars, propelling forces; methods of loading and unloading cars; methods of storing mine products. Drainage: Sources, amount and character of mine waters, and methods of controlling the same; mine drainage by natural and artificial methods; water-supply; inundations, and modes of escape from inundated mines. Ventilation: Air of mines; underground gases and gases produced by blasting and other mining operations; methods of ventilation; mine explosions of firedamp and dust; mine fires; relief and rescue in case of accident. Senior optional; 2d term, five hours, at 9. Assistant Professor Crane.

6. Mine Administration. Mine accounts and management; care of sick and injured in case of accident; rules and regulations for equipping expeditions and maintaining camps. Optional for mining engineering students. Senior, 1st term, (*a*), five hours, by appointment. Assistant Professor Crane.

7.—Professional Thesis. Before graduation a thesis will be required of each student, embodying an elaborate description of some phase of mining or metallurgical processes, or of ore formation, or a description of the mineralogy or geology of some mining locality. It is presumed that material will largely be gathered for thesis work during the summer vacation excursions, but ideal plants may be constructed or mines developed in exceptional cases. The thesis work will be under the supervision of the department of geology and mining. It should be begun during the first term of the Senior year. A typewritten copy of the thesis must be presented to the head of the department of geology and mining not later than May 15, and must be approved by the head of the department before graduation.

8.—Summer Excursion Work. During the summer vacation between the Junior and Senior years students will be required to devote about four weeks to a study of some of the more important mining localities of America. Excursions will be made by the students, accompanied by instructors, so that a careful study may be made of the geology and mineralogy of the region, of the mines and mining methods, and of the plants for mining, ore dressing, and smelting. It is expected that this work will be exceedingly beneficial to the student. It will, therefore, be passed upon and graded the same as other studies in the course. Professor Haworth and Assistant Professor Crane.

## MINERALOGY.

Professor HAWORTH.

1.—ELEMENTARY MINERALOGY. A brief course in crystallography, blowpipe analysis, and the metalliferous and silicate minerals. In crystallography, considerable work is required in drawing crystal forms and measuring angles of crystal models and natural crystals. In blowpipe analysis, sufficient practice is required to familiarize the student with necessary blowpipe tests for mineral identification; but the general physical properties, as crystalline form, cleavage, gravity, hardness, and color, are emphasized as most important means of identification. Lectures and laboratory work. Required of Sophomore mining and chemical engineers. 2d term, daily, 3:30 to 5:30. Professor Haworth and assistant.

Mineralogy 3 (the College) is an optional for Senior chemical engineers.

## MODERN FOREIGN LANGUAGES.

The courses in French, German or Spanish to be taken by engineering students during the Freshman year can only be determined after consultation in individual cases, the choice depending upon the particular language or grouping of languages offered for entrance. In general, one offering three units of Latin may begin any one of the above-named languages. One offering one or more units of French or German will find opportunity to continue such language.

## PHYSICS.

Professor BLAKE.
Mr. STIMPSON.

4.—MECHANICS, SOUND, AND HEAT. A fundamental course of experimental lectures and recitations. Required of all engineering students. 1st term, four hours, at 11:15; laboratory two hours. Professor Blake and Mr. Stimpson.

Prerequisites: Plane trigonometry and analytical geometry.

5.—ELECTRICITY, MAGNETISM, AND LIGHT. Continuation of physics 4. Required of all engineering students. 2d term, four hours, at 11:15; laboratory two hours. Professor Blake and Mr. Stimpson.

Prerequisites: Plane trigonometry, analytics, and calculus.

## SHOP WORK.

Mr. Ward.
Mr. Hanson.
Mr. Jones.

Required of electrical and mechanical engineering students through the first three years of their course and of all other engineering students throughout the Freshman and Sophomore years. Total hours per term, seventy-eight.

1.—Forging, welding and working iron at proper heat. Making steel tools, and tempering. Freshman, 1st or 2d term, five hours. Mr. Hanson.

2.—Use of hand wood tools; sharpening; the lathe and pattern-turning; pattern-making, core boxes, draft, shrinkage, finish, etc.; selection of woods; exercises and working from special designs. Freshman, 1st or 2d terms, five hours. Mr. Jones.

3.—Filing, chipping, scraping, drilling, babbitting, and thread-cutting. Sophomore, 1st term, five hours. Mr. Ward.

4.—Lathe work. Turning cylinders, tapers, curves, and cutting threads. Sophomore, 2d term, five hours. Mr. Ward.

5.—Lathe work. Turning to close fit; eccentric and special thread-cutting. Junior, 1st term, five hours. Mr. Ward.

6.—Lathe, planer and milling-machine work. Boring, reaming and shaping to special design. Tool-making, hardening, and grinding. Junior, 2d term, five hours. Mr. Ward.

# IV. The School of Law.

## Faculty.

FRANK STRONG, Ph. D., President.

JAMES W. GREEN, A. M., Dean. Professor of Law.

WILLIAM L. BURDICK, Ph. D., LL. B., Professor of Law.

WILLIAM E. HIGGINS, B. S., LL. B., Associate Professor of Law.

———, Assistant Professor of Law.

**Special Lecturers for 1905-'06.**

JOHN C. POLLOCK, Judge of the United States District Court, Topeka.

J. G. SLONECKER, United States Referee in Bankruptcy, Topeka.

THOMAS B. WALL, ex-Judge of the District Court, Wichita.

R. F. THOMPSON, ex-Judge of the District Court, Minneapolis.

JOHN D. MILLIKEN, attorney at law, McPherson, "The Fourteenth Amendment to the Constitution of the United States.

THOMAS A. NOFTZGER, State Senator, Anthony.

EDWIN P. GATES, ex-Judge of the Circuit Court, Kansas City, Mo., "Historical Development of the Code."

CLARENCE S. PALMER, attorney at law, Kansas City, Mo., "Municipal Charters."

EDWARD L. SCARRITT, ex-Judge of the Circuit Court, Kansas City, Mo.

SELDEN P. SPENCER, ex-Judge of the Circuit Court, St. Louis, Mo., "Ethics of the Legal Profession."

JOHN H. ADAMS, St. Louis, Mo., "Practical Fire Insurance."

ROBERT E. BALL, attorney at law, Kansas City, Mo.

## Purpose of the School.

It is the aim of the School of Law to give all its students a thorough acquaintance with the general principles of American law; and to furnish a course of legal instruction that shall fit them to practice at the bar of any state of the Union, and to give those who do not expect to become practicing attorneys, but who desire to pursue certain legal subjects for their bearing upon business, such instruction as may be best suited to their needs.

### Degrees Granted.

The course of study of the School of Law leads to the degree of bachelor of laws (LL. B.)

### System of Instruction.

It is believed to be proved by experience that, to be thoroughly efficient, instructional training in law courses must be given by resident teachers who give their whole time to instruction. The work of the School of Law is under the direction of four resident instructors, supplemented by lectures on special topics by competent men in the actual practice of law.

### Method of Teaching.

There are in general three methods of class instruction in law: By lectures, by text-book, and by cases. The School of Law at the University does not pursue any method to the entire exclusion of the others. It uses the text-book method very largely for the beginning classes, and makes use of the lecture and case methods more largely as classes advance in the course. Experience seems to have shown, however, that students get a clearer and more lasting knowledge of the fundamental principles of law through the study of a text-book and recitations in the class-room, together with a parallel study of cases to illustrate the principles involved.

The student is given large opportunity for free discussion of the topics in question, and is brought as closely as possible into personal touch with his instructor.

### Work in Preparation for Law.

All persons proposing to enter upon the study of law are earnestly recommended to take first either a regular or special course in the College. A good fundamental education is necessary to a successful study of law. Especially is it necessary now when the practitioner must come into competition with men who have had a thorough university training before they entered upon the study of law.

The College offers special work in subjects of great value as preparatory to law, in English and American constitutional and political history, constitutional law, political science, economics, sociology, history of international and common law, in rhetoric and English composition, and debating. These courses are especially recommended in preparation for law.

## Requirements for Admission.

There are two ways of admission to the School of Law of the University: First, by certificate; second, by examination.

**By Certificate.** Nearly all students enter the School of Law by certificates from high schools, academies, or other preparatory schools. The method of accrediting by certificate is the same as that in the College.

## Subjects for Admission.

The subjects for which entrance work may be offered, together with the number of units, are arranged in six groups, as follows; a total of fifteen units must be offered:

| | | |
|---|---|---|
| Group I, English. | English, three units. | All the English units are required. |
| Group II, Mathematics. | Algebra, one and one-half units.<br>Plane geometry, one unit.<br>Solid geometry, one-half unit. | The algebra, one and one-half units, and plane geometry, one unit, are required. |
| Group III, Foreign Languages. | Latin, four units.<br>Greek, three units.<br>German, three units.<br>French, three units. | Of these, three units are required, which must be, first, in Latin, or, second, in German. |
| Group IV, Physical Sciences. | Physical geography, one unit.<br>Physics, one unit.<br>Chemistry, one unit. | One unit is required. |
| Group V, Biological Sciences. | Botany, one unit.<br>Zoölogy, one unit. | Optional. |
| Group VI, History. | Greek and Roman, one unit.<br>Mediæval and modern, one unit.<br>English, one unit.<br>American, one unit.<br>Economics, one unit. | Two units are required. |

As observed above, to secure unconditional admission to the

Junior class of the School of Law, the candidate must offer fifteen units from the foregoing list of accredited preparatory subjects. Eleven and one-half units are required, as indicated; the other three and one-half units may be chosen at will from the groups.

In view of the difficulty some preparatory schools may have in expanding their courses of study so as to include all the prescribed units, until further notice candidates will be admitted unconditionally who offer fifteen units from the foregoing list, although some of the prescribed units may not have been completed. Such postponement of the completion of preparatory requirements is possible only in those subjects in which elementary courses are offered in the College. They include all the subjects in the list of preparatory studies except three units of English, two units of Latin, two and one-half units of of mathematics, physical geography, and American history.

**By Examination.** Candidates for admission to the Junior class of the School of Law who cannot bring certificates are required to be examined in the subjects named above. The time and place of examination are the same as in the College. (See page 68.)

### Length of Law Course.

The complete course includes three years, each of which occupies eight and one-half months (excluding two weeks' recess at Christmas). The first term of the year 1905–'06 will begin on Wednesday, the 6th day of September, 1905.

### The College and the School of Law in Six Years.

A regular course in the College, however, is strongly recommended. During the Junior and Senior years of the College the student may elect one-half year's work from the course in the School of Law. By this arrangement the student, by reasonable extra work, may finish both the College and the School of Law in six years.

### Courses in Law in the Summer Session.

Attention is called to the opportunity of shortening the law course by taking such law subjects as are offered in the Summer Session of the University. The Summer Session opens June 8 and closes July 19, 1905.

### Admission to Advanced Standing.

Persons who have privately completed a part of the course are admitted to advanced standing in the Junior and Middle classes, on satisfying the Faculty as to their qualifications. No one will be so admitted to the Senior class except upon passing a satisfactory ex-

amination upon the requirements for admission, and also upon the work prescribed for the Junior and Middle classes.

Certificates of work done in other law schools of recognized standing and equivalent requirements may be received in lieu of examinations for advanced standing.

### Special Students.

Opportunity is given in the School of Law for the admission of persons of mature years who desire to pursue special work, without following any prescribed course or becoming candidates for a degree.

The admission of such special students is directly under the control of the Dean of the School, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for standing as special students must present satisfactory evidence of proper preparation for the studies desired and must also meet other requirements as fixed by the Faculty.

Special students are subject to the same regulations as regular students with regard to the quality of work performed and attendance at recitations and examinations.

### Examinations.

The members of each class will be examined upon each topic when completed. A final examination will be held at the end of the third year, embracing all the studies of the course. The degree of bachelor of laws will be conferred upon members of the Senior class who complete the course of study according to the requirements.

### Thesis.

Each member of the Senior class who is a candidate for a degree is required to prepare and to deposit with the Faculty, at least one month before graduation, a thesis upon some legal topic selected by himself and approved by the Faculty, which thesis shall not be less than forty folios in length. The production must be satisfactory in matter, form, and style, and the student presenting it must hold himself in readiness to be examined upon the subject.

### Certificate of Attendance.

If the student does not graduate, he may, on application to the Registrar, receive an official certificate of his attendance and of the work accomplished by him in the school.

### Admission to the Bar.

The legislature of 1903 amended the statute regulating admission to the bar, and provided for state examinations by a commission appointed by the supreme court. The board of examiners meets at

Topeka on the third Monday in February, June, and October. Applicants for examination and proof of qualifications must be filed with the secretary of the board at least three weeks before the examination. Printed forms of applications may be obtained from L. H. Perkins, the secretary of the board, at Lawrence.

Graduates of the University of Kansas, upon presentation of diplomas, are excused from any examination upon preliminary educational qualifications. All others must present affidavits from teachers showing the completion of the following subjects, or pass examinations therein, to wit:

Three years English—grammar, rhetoric, and literature; arithmetic, algebra, geometry; general history, Roman, English and American history; civil government; the elements of physics, physical geography, botany, biology, political economy, and sociology.

All candidates for admission are required to pass a written examination covering their legal qualifications. All subjects included in this examination are within the course of study of the University School of Law.

### Practice Courts.

Systematic work in moot and practice courts is required throughout the course. Weekly sessions of these courts are held.

**Junior Year.** In the Junior year preliminary instruction is first given in the study of cases, the making of briefs, and the preparation of cases for argument. Following this preliminary instruction, moot court is held under the direction of a member of the Faculty. The places of judges, attorneys, clerk and other court officers are filled in rotation by members of the class. Cases involving statements of fact are assigned. Written briefs are required to be prepared, served upon the opposing attorneys, and submitted to a court composed of two members of the class and a member of the Faculty. Written opinions containing a full discussion of the legal questions presented are required to be handed down by the student justices.

**Middle Year.** The aim of the court of the Middle year is to instruct in the preparation of cases before and after they are filed in court. To this end, statements of fact are given to the members of the class, in accordance with which trial briefs of the law and of the facts are made, and pleadings under the code are drawn. Each member of the class receives from the instructor in charge criticism of the work done. The practice in the court follows closely the practice in the district courts of Kansas. Besides this work, a course of lectures is given on instructions to juries and findings of fact. Members of the class are required to draw instructions and findings under the direction of instructor in charge of the course.

**Senior Year.** The work of this year is partly the continuation of the work of the first two years. In addition, the students are required to prepare all the papers, including a case-made or bill of exceptions necessary to take a case from the lowest to the highest court. Each successive step is criticized and discussed by a member of the Faculty and made to conform to the practice of actual courts in the conduct of a case, from its inception to determination by the court of last resort. The case to be so taken up must be originated by the student himself, thus affording a test of the knowledge of the jurisdiction both of *nisi prius* and appellate courts with respect to different causes of action.

## Expenses.

Each student entering the Law School for the first time is required by law to pay a matriculation fee of five dollars. Each student, in whatever year of the law course he may be, is required by law to pay an incidental fee of twenty-five dollars. Non-residents of Kansas pay a matriculation fee of ten dollars and an incidental fee of thirty-five dollars. Students of the School of Law may divide the payment of the incidental fee between the two terms of the school year. A diploma fee of five dollars is required at graduation.

Many students reduce their living expenses by doing light housekeeping. Board, room, light and fuel cost from three to five dollars per week. Further information about expenses may be found in connection with the College, in this catalogue.

### Student Organizations.

**Cooley Club.** Meetings of the club occur once each week. Any student of the School of Law is eligible, but the membership is confined at present mainly to the members of the Junior and Middle classes. Legal questions are debated, and to this is added the work of the ordinary literary debating society.

**Kent Club.** The members of the Kent club are, in the main, members of the Senior class, although any student in the School of Law is eligible to membership. The work consists of the discussion of legal, economic and historical questions, and the consideration of legal literature. Debating is a prominent feature of the work of the club.

### The Kansas Lawyer.

This is a monthly publication edited by the students of the School of Law. It is devoted to legal literature and to items of interest to the students and alumni of the school.

**Honors and Prizes.**

By resolution, the State Bar Association of Kansas, as a recogn tion of the School of Law and for the purpose of encouraging its students to work along the line of legal literature, assigns a place on the literary program of the annual meeting at Topeka to that student of the Senior class who prepares the best paper on some legal topic assigned by the Law Faculty. The merits of the paper submitted are passed upon by a committee appointed for the purpose by the association. James A. Brady was given the honor in 1904–'05.

The Edward Thompson Company offers annually a prize of a set of the American and English Encyclopedia of Law for the best thesis on a subject assigned by the Law Faculty. The contest is open to all members of the School of Law. Lynn W. Culp won this prize in 1904–'05.

## Debating.

Interstate debates are held each year with Missouri and Iowa. Members of the two law-school clubs are chosen to represent these clubs on the debating squad of the University. This squad receives practical instruction in public speaking and debating from a committee of the general Faculty of the University. Law students are also eligible to membership in the general literary clubs of the University which are also represented in the debating squad. From this squad the debating teams for the interstate debates are chosen by competition.

## Equipment.

**Law Building.** A new building for the School of Law of the University was completed during the summer of 1905. The building cost $65,000, and is one of the most complete and best-equipped law buildings in the West. It has three floors, devoted to recitation-rooms, offices, library, and rooms for the law-school clubs. The library contains space for about 20,000 volumes, and private study-rooms for students and Faculty open into the reading-room of the library. A large room is set aside for a practice court and the best facilities possible is available for students of the law.

**Libraries.** The law library is composed of upwards of 3000 volumes, for the exclusive use of the students of the School of Law. The library has an excellent equipment of the best law text-books, and new texts are being added constantly. It has also reports of the courts of last resort, both state and federal, as well as Lawyers' Reports Annotated, American Decisions, American Reports, and the complete *Reporter* system. Limited space has prevented as rapid growth of the library as desired, and in the new building large ad-

ditions will be made to the library equipment. In addition to the volumes devoted exclusively to law, the University library of 50,000 volumes is at the disposal of the law students. They thus have at hand the largest and best selected scholarly library in the Southwest. The city library, soon to be housed in the Carnegie building, will also be opened to the students of the School of Law for books of fiction and general literature.

**State Library.** The state library, at Topeka, which is largely a law library, is easily accessible to students upon necessary occasions. Such works as may be found usually in large state libraries will therefore be at the disposal of the members of the Law School at various times during the year.

## Courses of Study.

JUNIOR YEAR.

*First Term* (first half):

Elementary Law, Robinson. Daily, at 10:15. Professor Higgins.
Contracts, Clark. Daily, at 11:15. Professor Green.
Moot Court. The Study of Cases. Once a week. Hours by appointment. Mr. ———.

*First Term* (second half):

Agency, Mechem. Daily, at 9. Associate Professor Higgins.
Contracts, Clark. Daily, at 11:15. (Continuation of the work of first half-term.) Professor Green.
Moot Court. Once a week. Mr. ———.

*Second Term* (first half):

Torts, Bigelow. Daily, at 9. Mr. ———.
Bailments, Schouler. Daily, at 10:15. Mr. ———.
Sales, Burdick, and cases. Daily, at 11:15. Professor Burdick.
Moot Court. Once a week. Mr. ———.

*Second Term* (second half):

Damages, ———. Daily, at 10:15. Mr. ———.
Domestic Relations, Schouler, and lectures. Daily, at 11:15. Professor Burdick.
Moot Court. Once a week. Mr. ———.

MIDDLE YEAR.

*First Term* (first half):

Insurance, Elliott. Daily, at 9. Associate Professor Higgins.
Criminal Law, Clark and Marshall, or Bishop. Daily, at 10:15. Professor Burdick.
Practice Court. Once a week. Associate Professor Higgins.

*First Term* (second half):

Common-law Pleading, Perry. Daily, at 10:15. Professor Burdick.
Equity, Eaton. Daily, at 11:15. Professor Burdick.
Practice Court. Once a week. Associate Professor Higgins.

*Second Term* (first half):

Code Pleading, Bliss. Daily, at 9. Associate Professor Higgins.
Equity Pleading, Fletcher. Daily, at 10:15. Professor Burdick.
Practice Court. Daily, by divisions of the class in connection with Code Pleading, at 11:15, and once a week for the entire class. Associate Professor Higgins.

*Second Term* (second half):

Bills and Notes, Norton. Daily, at 9. Mr. ———.

Evidence, Chase's Stephen's Digest. Daily, at 10:15. Professor Green.

Practice Court. Daily, by divisions, and once a week for the entire class. Associate Professor Higgins.

SENIOR YEAR.

*First Term* (first half):

Real Property, Tiedeman. Daily, at 9. Mr. ———.

Evidence, Chase's Stephen's Digest. Daily, at 10:15. Professor Green.

Roman Law, Lectures, Justinian Institutes. Daily, at 11:15. Professor Burdick.

Practice Court. Once a week. Professor Burdick.

*First Term* (second half):

Real Property, Tiedeman. Daily, at 9. (Continuation of the work of the first half-term.) Mr. ———.

Corporations, Clark. Daily, at 10:15. Professor Green.

International Law, Lawrence. Daily, at 11:15. Mr. ———.

Practice Court. Once a week. Professor Burdick.

*Second Term* (first half):

Constitutional Law, Black. Daily, at 9. Professor Green.

Corporations, Clark. Daily, at 11:15, for four weeks. Professor Green.

Municipal Corporations, ———. Daily, at 11:15, for five weeks. Professor Green.

Practice Court. Once a week. Professor Burdick.

*Second Term* (second half):

Wills and Administrations, Underhill, first volume. Daily, at 9. Associate Professor Higgins.

Partnership, Parsons. Daily, at 10:15. Associate Professor Higgins.

Constitutional Law, Black. Daily, at 11:15, for four weeks. Professor Green.

Conflict of Laws, Minor. Daily, at 11:15, for five weeks. Professor Green.

Practice Court. Once a week. Professor Burdick.

# V. The School of Fine Arts.

## Faculty.

Frank Strong, Ph. D., President.

Charles S. Skilton, A. B., Dean. Professor of History of the Fine Arts, Musical Theory, and Organ.

Carl A. Preyer, Professor of Piano, Musical Theory, Counterpoint, Canon, and Fugue.

Charles E. Hubach, Professor of Voice.

William A. Griffith, Professor of Drawing and Painting.

Ralph Wylie, Professor of Violin.

Alexander M. Wilcox, Ph. D., Professor of Greek Language and Literature.

Lucien I. Blake, Ph. D., Professor of Physics.

Charles G. Dunlap, Litt. D., Professor of English Literature.

Edwin M. Hopkins, Ph. D., Professor of Rhetoric and English Language.

Arvin S. Olin, A. M., Professor of Education.

Eugenie Galloo, A. M., Professor of Romance Languages and Literatures.

Raphael D. O'Leary, A. B., Associate Professor of English.

Elmer F. Engel, A. M., Assistant Professor of German.

Archibald Hogg, A. B., Assistant Professor of Philosophy.

Alberta L. Corbin, Ph. D., Assistant Professor of German.

Edgar G. Frazier, Ph. B., Assistant Professor of Public Speaking.

Margaret Lynn, A. M., Assistant Professor of English.

Frank E. Bryant, A. M., Assistant Professor of English.

Mary C. Fish, Instructor in Physical Education.

Harriet Greissinger, Mus. B., Instructor in Piano.

Blanche Lyons, Assistant in Voice.

Maude B. Cooke, Assistant in Piano.

Maud Miller, Mus. B., Assistant in Piano.

Julia Righter, Mus. B., Assistant in Piano.

Louise Wiedemann, Mus. B., Assistant in Piano.

Alice A. Flintom, Mus. B., Assistant in Voice.

## Departments.

The School of Fine Arts is made up of the following departments: 1) Music. (2) Drawing and Painting. (3) Elocution.

### Degrees.

The courses of study in the School of Fine Arts lead to the following degrees:

Bachelor of music.

Bachelor of painting.

Teacher's certificate of completion of two-year course.

## Requirements for Admission.

There are two methods of admission to the School of Fine Arts: First, by examination; second, by certificate.

**By Examination.** All students who cannot present certificates from accredited schools will be examined in the subjects required for entrance. The times and place of examination are set forth on page 68 of this catalogue.

**By Certificate.** Students will be admitted without examination on certificates from high school or other preparatory school, signed by the proper school officer. The general plan is the same as that noted under "The College," on page 69.

### Units Required for Admission.

Eight and one-half units of high-school work are required for full admission to the School of Fine Arts. (For information concerning special students, see page 242.) The eight and one-half units must include the following:

Three units in English from group I.

Two and one-half units in mathematics from group II.

One unit in history from group VI.

Two units from any courses remaining, as outlined in the following:

| | SUBJECTS OFFERED. | |
|---|---|---|
| GROUP I, English. | English, three units. | All the English units are required. |
| GROUP II, Mathematics. | Algebra, one and one-half units.<br>Plane geometry, one unit.<br>Solid geometry, one-half unit. | The Algebra, one and one-half units, and plane geometry, one unit, are required. |

| | | |
|---|---|---|
| Group III, Foreign Languages. | Latin, four units.<br>Greek, three units.<br>German, three units.<br>French, three units. | All optional, except that students who take German in the University must offer three units of Latin for entrance. |
| Group IV, Physical Sciences. | Physical geography, one unit.<br>Physics, one unit.<br>Chemistry, one unit. | All optional. |
| Group V, Biological Sciences. | Botany, one unit.<br>Zoology, one unit. | All optional. |
| Group VI, History. | Greek and Roman, one unit.<br>Mediæval and modern, one unit.<br>English, one unit.<br>American, one unit.<br>Economics, one unit. | One unit is required. |

**Additional Requirements.**

**In Violin.** Applicants must add to the general requirements stated above an ability to play correctly selections from the Wichtl School, Book I, and from Kayser, Thirty-six Studies, Book I.

**In Piano and Organ.** In addition to the technical requirements, consisting of the major and the harmonic and melodic minor scales, the triad, dominant seventh and diminished seventh arpeggios, candidates will be required to play in tempo, and with correct touch, fingering, and phrasing, selections from the following: Loeschorn, op. 66; Bach's Easy Preludes; Heller, op. 47, or equivalents; Mozart, Sonata in A major (themes, variations, etc.)

**In Latin.** All students expecting to take German in the regular course must offer three units of Latin.

**Special Students.**

Students need not be deterred from seeking to enter the School of Fine Arts of the University because they cannot satisfy all the requirements for full admission to that school. Those requirements are for persons who are candidates for a degree in music or painting. All persons who desire to pursue a special line of work, without conforming to the requirements for entrance, or following a prescribed course, may apply for admission to the School of Fine Arts as special students. The admission of such persons is under the control of the Dean, to whom they should apply, and whose certificate of acceptance must be presented to the Registrar before registration.

Applicants for standing as special students must present satis-

factory evidence of proper preparation for the studies desired. Special students are subject to the same regulations as regular students as to quality of work, attendance at recitation, and examinations.

### Ensemble Playing.

An ensemble class meets weekly for the study of concerted music. The class is assisted by a violinist and a violoncellist, with whom the piano students who are members take turns in playing trios. Eight-hand piano music is also studied. Thus pupils become acquainted with many masterpieces which are often inaccessible to music students, and acquire habits of sight-reading and accompanying, which are invaluable to the musician. Advanced students also have the opportunity of playing concertos with the University Orchestra.

### Clubs.

**The University Orchestra** is an organization of students directed by the Dean, which gives two concerts each year, and furnishes music for commencement and other occasions.

Classical and popular music is studied. All students who play orchestral instruments with sufficient skill are eligible.

**The Glee Club** is composed of young men, under the direction of the professor of voice training. They give two concerts a year, and make a concert tour of the state.

**The Young Ladies' Glee Club,** under the direction of the Dean of the School of Fine Arts, renders music on various occasions, and, united with the Men's Glee Club, forms the University Chorus, which sings at the annual music festival and at other times.

**The Mandolin Club** is composed of mandolin, banjo and guitar players under a leader appointed by the Dean of the School of Fine Arts. It gives two concerts a year, and makes a concert tour.

**The Dramatic Club,** under the direction of the instructor in elocution, gives public performances of two modern plays each year. The club is open to students in this school.

**The Reading Club** is an organization conducted by young women interested in the study of oral expression. The club meets once each week during the college year, and a program of readings, recitations, impersonations and farces is given. Membership is open to all women in the University.

### The Normal Class.

The normal class is designed especially for students fitting themselves for teachers, although all students of the school are required to attend. The work consists of lectures on the methods of teaching;

papers and discussions by students; careful study of the systems in use in the school, which, in music, aim equally to combine the melodic and musical elements with that of the technical; the examination of other systems, always with a view of shortening the processes and roads to a high grade of musical execution. Once a month the conference is devoted to a discussion of current events.

### Tuition.

No student will be accepted for less than a half-term. Students who begin lessons during a half-term must pay tuition for the entire half-term.

The receipt of the treasurer of the School of Fine Arts must be presented to secure enrolment in classes or for private lessons at the beginning of each quarter. No reduction is made for lessons missed except in case of illness, when the School of Fine Arts shares the loss equally with the pupil.

### General.

It is required of all candidates for a degree that two years be spent in residence at the University. During the first two years piano students take one lesson a week from Professor Preyer and one from an assistant, and attend technic class with an assistant; in the third and fourth years all piano lessons are with Professor Preyer. The year is divided into four quarters, two quarters in each term.

The school does not furnish pianos for practice at the building, but instruments can be rented in town for from three to five dollars a month, and grand pianofortes at from seven to ten dollars a month. Pianos rented of private parties, or in connection with board, may often be secured at even lower rates. If desired, several students may unite in renting an instrument, thus materially reducing the expense.

Students in drawing and painting will be required to furnish their own materials, except easels and drawing-boards.

All art work, when finished, is under the control of the instructors until after the close of the public exhibition of student work, at the end of the academic year.

## Equipment.

**In Music.** The department of music of the University occupies a building of its own—North College. The down-town music studios, in the Dick building, are used by the assistant instructors. The school is well equipped with pianos, including six concert grands; a three-manual pipe-organ, built by King & Sons, of Elmira, N. Y.; charts for sight-reading, for illustrating vocal, pianoforte, and lecture

courses; about 100 lantern slides for use in connection with lectures in architecture, the graphic arts, and musical history.

**In Drawing and Painting.** The department of drawing and painting offers instruction in free-hand drawing in charcoal, pencil, and pen and ink; painting in oil and water-colors from still life, the living model, and landscape; ornamental design, perspective, and pictorial composition.

**The Studios** are located on the third floor of Snow Hall, and are well equipped with plaster casts from the antique, articles from still life, books and photographs upon the fine and applied arts.

**The Greenhouse** is on the same floor, and here plants are cultivated for the use of the class in ornamental design.

One of the studios can be darkened for a lecture-room. It is equipped with a lantern and several hundred slides.

There is a force-press for the printing of etchings and another for color-printing. The students have the use of these presses for the reproduction of their designs.

The mounted natural history specimens furnish a great deal of valuable material for the students in painting and motifs for the classes in design.

In the studios there are sixty-five casts, among which will be found the Nike of Samothrace; Venus di Milo; Diana Robing; Augustus Cæsar; Tomb of Lorenzo de Medici, by Michel Angelo; Nike, by Praxiteles; several Panagra figures; three lions, by Barye; Satyr and Narcissus, from Pompai; Laughing Fawn, in the Louvre; Clyte, from the British Museum; Minerva; Sappho; Laughing Boy, by Donatello; Maiden of Lilli, attributed to Raphael; Dante; the Unknown Woman, in the Louvre; Washington and Franklin, by Houdon; the large Bacchic Procession, from the Naples museum; Bucchante, from the Villa Albani, Rome; Boys playing on trumpets, by Luca della Robbia; Madonna and child, with two angels, and the Annunciation, by Andrea della Robbia; Cherub playing on double pipe, by Donatello; Nymph, by Jean Goujon; French peasant, by Carpeaux; the head of Cæsar, from the Trajan column; busts of Brutus, Agrippa, Apollo Belvedere; also, a number of studies of ornament and architectural details.

Pupils will have access to the classical museum, containing a good collection of antique casts—in the round, including the Venus di Milo, the Borghese Warrior, the Emperor Augustus, the Reclining Young Man of the East Pediment of the Parthenon, and the so-called Germanicus; in relief, parts of the frieze of the Parthenon, a part of a Bacchic procession, three plates in high relief, Metopes of the Parthenon, etc.

Busts of Young Augustus, Niobe, Apollo Belvedere, Clytie, Eros, Homer, Socrates, Cicero, and many of the Roman emperors.

Masks of Brutus, Niobe, Laocoon, and Agrippa.

Small full figures of Venus di Milo, Diana Robing, and Narcissus.

Models of the Acropolis of Athens, the Quoit Thrower of Myron, Amazon Antinous, Diana of Gabii, and others; colored charts of Greek and Roman architecture.

Plates.—Seventy colored, by Reinhard, illustrating Roman architecture; 89 plates of forms, painting and decoration of Greek vases; 471 plates illustrating Greek and Roman antiquities; 100 plates illustrative of art mythology; 2000 illustrations of classical monuments; manuscript facsimiles, inscriptions, etc.; phototypes of sculpture and photography.

**The Library.** The University Library contains a good collection of works on art, including art exposition and criticism, musical history, vocal and orchestral scores of operas, symphonies, chamber music, oratorios and cantatas, pianoforte and organ music, and collections of standard merit. This collection is annually increased.

### Concerts and Recitals.

Concerts are frequently given in Recital hall and in University hall by the professors and advanced students. A concert course is arranged for, which affords students an opportunity of hearing many noted musicians, while the nearness of Lawrence to Kansas City and Topeka is taken advantage of when these cities are visited by the great musical artists or opera companies of the day. Special rates are secured for these events.

Recitals are given fortnightly by the students of the school, at which works studied in the classroom are performed before a small audience of fellow students and their friends. Every student is required to attend these recitals and all concerts, and take part in the programs at least twice a year. These semipublic appearances are of great assistance in acquiring the ease and self-possession so essential to a successful public performance.

Toward the end of the college year the University Chorus and the Oratorio Society of Lawrence unite in a music festival of two days' duration, at which the Chicago Symphony Orchestra and noted soloists take part, and several masterpieces of choral and orchestral music are rendered.

### Art Exhibitions.

An exhibition of works of art will be held every fall at the University, together with a course of lectures upon subjects relating to the fine arts. Exhibitions of the work of the students are held from time to time.

## Expenses.

By legislative enactment, a matriculation fee of five dollars (to be paid but once) must be charged each student of Kansas entering the School of Fine Arts. Non-residents of Kansas must pay a matriculation fee of ten dollars.

The instructors in the School of Fine Arts receive compensation from the state for only part of the work of the courses, and the remainder must be paid for at rates indicated below.

All bills are payable quarterly in advance.

No fees will be refunded if the student leaves before the end of a half-term. The receipt of the treasurer of the School of Fine Arts must be presented each quarter to secure enrolment in classes or for private lessons. No lessons are given during the week of the semiannual examinations.

Rates for regular students (two half-hour lessons a week):

| | | |
|---|---|---|
| First year..... | Piano, per quarter..... | $31 00 |
| | Voice, per quarter..... | 28 50 |
| | Violin, per quarter..... | 28 50 |
| | Elocution, per quarter..... | 31 00 |
| | Drawing and painting, per quarter..... | 15 00 |
| Second year.... | Rates the same as for first year. | |
| Third year..... | Piano, per quarter..... | $33 50 |
| | Organ, per quarter..... | 33 50 |
| | Voice, per quarter..... | 31 00 |
| | Violin, per quarter..... | 31 00 |
| | Drawing and painting, per quarter..... | 15 00 |
| Fourth year.... | Rates, free to Kansas students. For non-residents, the same as for the third year. | |

### Rates for Special Students.

| | |
|---|---|
| Preliminary years and private lessons with assistants: | |
| Piano, two lessons a week, per quarter..... | $13 50 |
| " one lesson a week, per quarter..... | 7 00 |
| Voice, two lessons a week, per quarter..... | 18 00 |
| " one lesson a week, per quarter..... | 10 00 |
| Lessons with heads of departments (one-half-hour lessons): | |
| Piano, two lessons a week, per quarter..... | 28 00 |
| " one lesson a week, per quarter..... | 16 00 |
| Voice, two lessons a week, per quarter..... | 28 00 |
| " one lesson a week, per quarter..... | 16 00 |
| Organ, two lessons a week, per quarter..... | 28 00 |
| " one lesson a week, per quarter..... | 16 00 |
| Violin, two lessons a week, per quarter..... | 28 00 |
| " one lesson a week, per quarter..... | 16 00 |
| Harmony, counterpoint, composition, instrumentation— | |
| Per quarter..... | 28 00 |
| In class..... | 10 00 |
| Elocution, two lessons a week, per quarter..... | 28 00 |
| " one lesson a week, per quarter..... | 16 00 |

Three lessons a week (hour lessons).

| | |
|---|---|
| Painting, in class | $15 00 |
| Drawing, Saturday class, eighteen weeks | 7 50 |
| Physical education, private | 25 00 |
| " " in class | 5 00 |

**Other Expenses.** There are no dormitories connected with the University. Students find accommodations in the boarding-houses and homes of Lawrence. Information concerning the location of rooming- and boarding-places may be had at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at $4 a week. Some persons who furnish plain rooms and good, plain food receive students at $3 a week. Day board in private families and at city restaurants may be obtained for $2.75 to $4 a week. Day board in clubs varies from $2.50 to $3 a week. Furnished rooms, usually occupied by two students, range from $4 to $15 a month. Unfurnished rooms rent for $1.50 to $3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can attend the University for very little cost in money.

# Courses of Study.

## Pianoforte.

**Leading to the Degree of Bachelor of Music.**

FRESHMAN YEAR.

*First Term:*

Piano 1, twice a week, by appointment. Professor Preyer and assistant.
Technic (Piano 5), once a week, by appointment. Assistants.
Harmony (Musical Theory 1), Tuesday and Friday, at 2:30. Professor Skilton.
Rhetoric 1, three hours a week. Miss Gardner.
English Literature 1, two hours a week. Miss Lynn.
Physical Education 1, once a week, by appointment. Miss Fish.
Normal Class, Wednesday, at 4. Professor Skilton.
History of Music, Thursday, at 4. Professor Skilton.
Recitals and Ensemble Playing.

*Second Term:*

Piano 1, twice a week, by appointment. Professor Preyer and assistant.
Technic (Piano 5), Wednesday, at 3:30. Assistants.
Harmony (Musical Theory 1), Tuesday and Friday, at 2:30. Professor Skilton.
Rhetoric 1, two hours a week. Miss Gardner.
English Literature 1, three hours a week. Miss Lynn.
Physical Education 2, once a week, by appointment. Miss Fish.
Normal Class, Wednesday, at 4. Professor Hubach.
History of Music, Thursday, at 4. Professor Skilton.
Recitals and Ensemble Playing.

SOPHOMORE YEAR.

*First Term:*

Piano 2, twice a week, by appointment. Professor Preyer and assistant.
Technic, once a week, by appointment.
Harmony (Musical Theory 2), Tuesday and Friday, at 3:30. Professor Skilton.
Physical Education 3, once a week, by appointment. Miss Fish.
English Literature 2, daily. Professor Lawrence.
Normal Class, Wednesday, at 4. Professor Hubach.

History of Music, Thursday, at 4. Professor Skilton.
Recitals and Ensemble Playing.
One of the following optionals may be taken (private lessons are subject to fees):
Vocal Culture 1, twice a week, with Italian 1, twice a week, by appointment. Professor Hubach.
Free-hand Drawing (Drawing and Painting 1), Monday, Wednesday, and Friday, 9 to 12:15, or 1:30 to 4:30. Professor Griffith.
Elocution 2, two times a week. Mr. Frazier.
German 1, daily, at 8, 9, 11:15, or 2:30. Mr. Engel and Miss Corbin.

*Second Term:*
Piano 2, twice a week, by appointment. Professor Preyer and assistant.
Musical Analysis (Musical Theory 3), Tuesday and Friday at 3:30. Professor Skilton.
Physical Education 4, once a week, by appointment. Miss Fish.
Normal Class, Wednesday, at 4. Professor Hubach.
History of Music, Thursday, at 4. Professor Skilton.
Recitals and Ensemble Playing.
Two forensics.
One of the following optionals may be taken (private lessons are subject to fees):
Vocal Culture 1, twice a week, with Italian 1, twice a week, by appointment. Professor Hubach.
Free-hand Drawing (Drawing and Painting 1), Monday, Wednesday, and Friday, at 9 to 12:15, or 1:30 to 4:30. Professor Griffith.
Elocution 2, two times a week. Mr. Frazier.
German 2, daily, at 8, 9, 11:15, or 2:30. Mr. Engel and Miss Corbin.

JUNIOR YEAR.

*First Term:*
Piano 3, twice a week, by appointment. Professor Preyer.
Composition (Musical Theory 5), Monday, at 3:30. Professor Preyer.
Counterpoint (Musical Theory 4), Thursday, at 3:30. Professor Preyer.
History of Music, Thursday, at 4. Professor Skilton.
English Language 4, Monday, Wednesday, and Friday, at 8. Professor O'Leary and assistants.
Normal Class, Wednesday, at 4. Professor Hubach.

Acoustics and Optics (Physics 11), by appointment. Professor Blake. (Not given in 1906.)
Recitals and Ensemble Playing.
One of the following optionals may be taken (private lessons are subject to fees):
Vocal Culture 1 or 2, twice a week, by appointment. Professor Hubach.
Drawing and Painting 1 or 2. Professor Griffith.
Elocution 2, two times a week. Mr. Frazier.
German 1 or 3, daily. Mr. Engel and Miss Corbin.
Education 1, daily, at 4:30. Professor Olin.

*Second Term:*

Piano 3, twice a week, by appointment. Professor Preyer.
History of Music, Thursday, at 4. Professor Skilton.
Composition (Musical Theory 6), Monday, at 3:30. Professor Preyer.
Counterpoint (Musical Theory 4), Thursday, at 3:30. Professor Preyer.
Acoustics.
Two forensics.
Normal Class, Wednesday, at 4. Professor Hubach.
Recitals and Ensemble Playing.
One of the following optionals may be taken (private lessons are subject to fees):
Vocal Culture 1 or 2, twice a week, by appointment. Professor Hubach.
Drawing and Painting 1 or 2. Professor Griffith.
German 2 or 4, daily. Mr. Engel and Miss Corbin.
Education 1, daily, at 4:30. Professor Olin.
Elocution, two times a week. Mr. Frazier.

SENIOR YEAR.

*First Term:*

Piano 4, twice a week, by appointment. Professor Preyer.
Composition (Musical Theory 6), Wednesday, at 2:30. Professor Preyer.
Counterpoint (Musical Theory 7), once a week, by appointment. Professor Preyer.
Recitals and Ensemble Playing.
Two forensics, or graduating thesis.

*Second Term:*

Piano 4, twice a week, by appointment. Professor Preyer.
Instrumentation (Musical Theory 9), once a week, Wednesday, at 3. Professor Skilton.

Canon and Fugue (Musical Theory 7), once a week, Professor Preyer.

Normal Class, Wednesday, at 4. Professor Hubach.

Two forensics, or graduating thesis.

GRADUATE COURSE.

Piano 6, a graduate course, is offered in pianoforte, leading to the degree of master of music (M. M.) The course is open only to graduates of the artists' course who have taken Senior composition work, and to graduates of other schools who have done a corresponding amount of work. In all cases an entrance examination will be insisted upon in both piano and musical composition. The examination will consist of the technic, studies, concertos, etc., and the composition work required for the completion of the Senior year, outlined above; and furthermore, grade I will be required of all applicants. A pianoforte recital is required upon completion of the course and the performance of an original composition is one of the larger forms.

## Organ.

**Leading to the Degree of Bachelor of Music.**

Two years' course, open to those who have completed the work of the Sophomore year.

JUNIOR YEAR.

*First Term:*

Organ 1, twice a week, by appointment. Professor Skilton.

Composition (Musical Theory 5), Monday, at 3:30. Professor Preyer.

History of Music, Thursday, at 4. Professor Skilton.

English Language 4, Monday, Wednesday, and Friday, at 8. Professor O'Leary and assistants.

Acoustics and Optics (Physics 11), by appointment. Professor Blake. (Not given in 1906.)

Normal Class, Wednesday, at 4. Professor Skilton.

Recitals and Ensemble Playing.

One the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1 or 2, by appointment. Professor Hubach.

German 1 or 3, daily. Mr. Engel and Miss Corbin.

Drawing and painting 1 or 2. Professor Griffith.

Elocution, two times a week. Mr. Frazier.

*Second Term:*

Organ 1, twice a week, by appointment. Professor Skilton.
Composition (Musical Theory 6), Monday, at 3:30. Professor Preyer.
Counterpoint (Musical Theory 4), Tuesday, at 3:30. Professor Preyer.
History of Music, Thursday, at 4. Professor Skilton.
Two forensics.
Normal Class, Wednesday, at 4. Professor Hubach.
Recitals and Ensemble Playing.
One of the following optionals may be taken (private lessons are subject to fees):
Vocal Culture 1 or 2, by appointment. Professor Hubach.
Drawing and Painting 1 or 2. Professor Griffith.
Elocution, two times a week. Mr. Frazier.
German 2 or 4, daily. Mr. Engel and Miss Corbin.

SENIOR YEAR.

*First Term:*

Organ 2, twice a week, by appointment. Professor Skilton.
Composition (Musical Theory 4), Wednesday, at 2:30. Professor Preyer.
Counterpoint (Musical Theory 7), Wednesday, at 9. Professor Preyer.
Church Music, once a week. Professor Skilton.
Two forensics, or graduating thesis.
Recitals and Ensemble Playing.

*Second Term:*

Organ 2, twice a week, by appointment. Professor Skilton.
Instrumentation (Musical Theory 8), Wednesday, at 3. Professor Skilton.
Counterpoint (Musical Theory 7), Wednesday, at 9. Professor Preyer.
Two forensics, or graduating thesis.
Normal Class, Wednesday, at 4. Professor Hubach.

## Violin.

**Leading to the Degree of Bachelor of Music.**

This course is the same as the four-year course in piano, except that violin 1, 2, 3 and 4 take the place of piano 1, 2, 3, 4, and 6. Piano 5 is not required.

## Vocal Culture.

**Leading to the Degree of Bachelor of Music.**

FRESHMAN YEAR.

*First Term:*

Vocal Culture 1, twice a week, by appointment. Professor Hubach.

Harmony (Musical Theory 1), Tuesday and Friday, at 2:30. Professor Skilton.

Rhetoric 1, three hours a week. Miss Gardner.

English Literature 1, two hours a week. Miss Lynn.

Italian 1, twice a week, by appointment.

Physical Education 1, once a week. Miss Fish.

Normal Class, Wednesday, at 4. Professor Skilton.

History of Music, Thursday, at 4. Professor Skilton.

Recitals.

*Second Term:*

Vocal Culture 1, twice a week, by appointment. Professor Hubach.

Harmony (Musical Theory 1), Tuesday and Friday, at 2:30. Professor Skilton.

Rhetoric 1, two hours a week. Miss Gardner.

English Literature 1, three hours a week. Miss Lynn.

Italian 1, twice a week, by appointment.

Physical Education 2, once a week. Miss Fish.

Normal Class, Wednesday, at 4. Professor Skilton.

History of Music, Thursday, at 4. Professor Skilton.

Recitals.

SOPHOMORE YEAR.

*First Term:*

Vocal Culture 2, twice a week, by appointment. Professor Hubach.

Harmony (Musical Theory 2), Tuesday and Friday, at 3:30. Professor Skilton.

English Literature 2, daily.

Physical Education 3, once a week. Miss Fish.

Normal Class, Wednesday, at 4. Professor Skilton.

History of Music, Thursday, at 4. Professor Skilton.

Recitals.

One of the following optionals may be taken (private lessons are subject to fees):

Piano 1, twice a week. Professor Preyer.

Free-hand Drawing (Drawing and Painting 1), Monday, Wednesday, and Friday, 9 to 12:15, or 1:30 to 4:30. Professor Griffith.

Elocution 2, two times a week. Mr. Frazier.
German 1, daily, at 8, 9, 11:15, or 2:30. Mr. Engel and Miss Corbin.

*Second Term:*

Vocal Culture 2, twice a week, by appointment. Professor Hubach.
Harmony, Tuesday and Friday, at 3:30. Professor Skilton.
Physical Education 4, once a week. Miss Fish.
Normal Class, Wednesday, at 4. Professor Skilton.
History of Music, Thursday, at 4. Professor Skilton.
Recitals.
Two forensics.
One of the following optionals may be taken (private lessons are subject to fees):
Piano 1, twice a week, by appointment. Professor Preyer.
Free-hand Drawing (Drawing and Painting 1), Monday, Wednesday, and Friday, 9 to 12:15, or 1:30 to 4:30. Professor Griffith.
Elocution 4, two times a week. Mr. Frazier.
German 2, daily, at 8, 9, 11:15, or 2:30. Mr. Engel and Miss Corbin.

JUNIOR YEAR.

*First Term:*

Vocal Culture 3, twice a week, by appointment. Professor Hubach.
Composition (Musical Theory 5), Monday, at 3:30. Professor Preyer.
Counterpoint (Musical Theory 4), Thursday, at 3:30. Professor Preyer.
History of Music, Thursday, at 4. Professor Skilton.
English Literature 4, Monday, Wednesday, and Friday, at 8. Professor O'Leary and assistants.
Acoustics and Optics (Physics 11), by appointment. Professor Blake. (Not given in 1906.)
Normal Class, Wednesday, at 4. Professor Skilton.
One of the following optionals may be taken (private lessons are subject to fees):
Piano 1 or 2, twice a week, by appointment. Professor Preyer.
Drawing and Painting 1 or 3. Professor Griffith.
Elocution, two times a week. Mr. Frazier.
German 1 or 3, daily. Mr. Engel and Miss Corbin.

*Second Term:*

Vocal Culture 3, twice a week, by appointment. Professor Hubach.

Composition (Musical Theory 6), Monday, at 3:30. Professor Preyer.

Counterpoint (Musical Theory 4), Thursday, at 3:30. Professor Preyer.

History of Music, Thursday, at 4. Professor Skilton.

Normal Class, Wednesday, at 4. Professor Skilton.

Two forensics.

One of the following optionals may be taken (private lessons are subject to fees):

Piano 1 or 2, twice a week, by appointment. Professor Preyer.

Drawing and Painting 1 or 2. Professor Griffith.

Elocution, two times a week. Mr. Frazier.

German 2 or 4, daily. Mr. Engel and Miss Corbin.

SENIOR YEAR.

*First Term:*

Vocal Culture 4, twice a week, by appointment. Professor Hubach.

Composition (Musical Theory 6), Wednesday, at 3:30. Professor Preyer.

Counterpoint (Musical Theory 7), Tuesday, at 3:30. Professor Preyer.

Two forensics, or graduating thesis.

*Second Term:*

Vocal Culture 4, twice a week, by appointment. Professor Hubach.

Instrumentation (Musical Theory 8), Wednesday, at 3. Professor Skilton.

Opera, once a week. Professor Hubach.

Dramatic Action, twice a week, by appointment. Mr. Frazier.

Two forensics, or graduating thesis.

## Drawing and Painting.

**Leading to the Degree of Bachelor of Painting.**

FRESHMAN YEAR.

Drawing (Drawing and Painting 1), Monday, Wednesday, and Friday, 1:30 to 4:30, throughout the year. Professor Griffith.

Painting (Drawing and Painting 6), daily, 1:30 to 4:30, 2d term. Professor Griffith.

English Literature 1, alternating with Rhetoric 1 throughout the year. Miss Lynn and Miss Gardner.

Composition (Drawing and Painting 9), Tuesday, at 1:30, throughout the year. Professor Griffith.

Perspective (Drawing and Painting 10), Thursday, at 1:30, throughout the year. Professor Griffith.

Physical Education 1 and 2, twice a week, throughout the year. Miss Fish.

SOPHOMORE YEAR.

Drawing (Drawing and Painting 2), 1st term, and 2d term, (*a*), daily, 1:30 to 4:30. Professor Griffith.

Drawing (Drawing and Painting 3 and 4), Monday, Wednesday, and Friday, 1:30 to 4:30, throughout the year. Professor Griffith.

Ornamental Design (Drawing and Painting 12), Monday, at 4:30, throughout the year. Professor Griffith.

Composition (Drawing and Painting 9), Tuesday, at 1:30, throughout the year. Professor Griffith.

English Literature 2, 1st term.

Two forensics, 2d term.

JUNIOR YEAR.

Painting (Drawing and Painting 7), 1st term and 2d term, daily, 1:30 to 4:30. Professor Griffith.

Painting (Drawing and Painting 8), 2d term, daily, 1:30 to 4:30. Professor Griffith.

Ornamental Design (Drawing and Painting 13), Thursday, at 4:30, throughout the year. Professor Griffith.

Composition (Drawing and Painting 9), Tuesday, at 1:30, throughout the year. Professor Griffith.

History of Greek Art (Greek 17), 2d term, daily, at 11:15. Professor Wilcox.

English Rhetoric 4, 1st term, Monday, Wednesday, and Friday, at 8. Professor O'Leary and assistants.

Acoustics and Optics (Physics 11), 2d term, by appointment. Professor Blake. (Not given in 1906.)

Two forensics, 2d term.

SENIOR YEAR.

Painting (Drawing and Painting 7), 1st term and 2d term, daily, 1:30 to 4:30. Professor Griffith.

Painting (Drawing and Painting 8), 2d term, daily, 1:30 to 5:30. Professor Griffith.

History of Ornament (Drawing and Painting 13), Thursday, at 4:30, throughout the year. Professor Griffith.

Composition (Drawing and Painting 9), Tuesday, at 1:30, throughout the year. Professor Griffith.

Modern Art (History of the Fine Arts 3), 2d term, Monday and Thursday, at 2:30. Professor Griffith.
Four forensics, or graduating thesis.
Graduating painting.

## Elocution.

Students who so desire may specialize throughout the course along the line of oratory, debate, and extempore speaking.

JUNIOR YEAR.

*First Term:*

Principles of Vocal Expression (Elocution 1), two hours a week, by appointment. Mr. Frazier.
American Prose and Poetry (Elocution 2), two hours a week, by appointment. Mr. Frazier.
Rhetoric 1, three times a week. Miss Gardner.
English Literature 1, twice a week. Miss Lynn.
Physical Education. Miss Fish.
One optional course may be chosen from the College, upon consent of the instructor.

*Second Term:*

Lecturing and Reading (Elocution 3), two hours a week, by appointment. Mr. Frazier.
English Prose and Poetry (Elocution 4), two hours a week, by appointment. Mr. Frazier.
Rhetoric 1, twice a week. Miss Gardner.
English Literature, three times a week. Miss Lynn.
Physical Education. Miss Fish.
One optional course may be chosen from the College, upon the consent of the instructor.

SENIOR YEAR.

*First Term:*

The Modern Drama (Elocution 5), two hours a week, by appointment. Mr. Frazier.
Platform Work (Elocution 6), two hours a week, by appointment. Mr. Frazier.
English Rhetoric 3, daily, at 8. Professor O'Leary and assistants.
Public Speaking 1, daily, at 1:30. Mr. Frazier and assistants.
Physical Education. Miss Fish.

*Second Term:*

Methods of Teaching Reading (Elocution 7), two hours a week, by appointment. Mr. Frazier.

Shakspere (Elocution 8), two hours a week, by appointment. Mr. Frazier.
Logic and Psychology, daily, at 8. Mr. Hogg.
English Literature 5, daily, at 10:15. Professor Dunlap.
Graduating recital.

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## Two-year Collegiate Courses.

These courses are intended for those students who feel that their time is limited. They are especially designed for teachers. The work is identical with that of the first and second years of the four-year collegiate courses outlined above. A diploma is given upon completion of one of these courses.

## Artists' Courses

**In Piano, Voice, Violin, Organ, or Musical Composition.**

These courses are the same as the four-year collegiate courses in these subjects, requiring for graduation a graduating recital or a program of original musical compositions, or a combination of both.

For entrance and continuation in these courses the highest grade will be required in all examinations in piano, voice, organ, violin, or composition.

## Normal Course

**In Public-school Music and Singing at Sight.**

This work consists of the Freshman year of the four-year course in vocal culture, together with vocal culture 6 and 7, upon the completion of which a teacher's certificate is given.

# Courses of Instruction.

## DRAWING AND PAINTING.

Professor GRIFFITH.

All courses except 5 are required of students of drawing and painting and are open to other students of the School of Fine Arts who are prepared for them.

1.—FREE HAND DRAWING. Free-hand drawing in charcoal from the cast. The method of instruction aims to teach the student to construct form in a simple and correct manner. Freshman, throughout the year, Monday, Wednesday, and Friday, 1:30 to 4:30. Professor Griffith.

2.—FREE-HAND DRAWING. Free-hand drawing in charcoal, from life. Designed to give firm construction in drawing and training in grasping the essential character of the model. Sophomore, 1st term, and 2d term, (*a*), Monday, Wednesday, and Friday, 1:30 to 4:30. Professor Griffith.

3.—FREE-HAND DRAWING. Free-hand drawing in pen and ink, from casts and still life. The technique of pen drawing for reproduction. Sophomore, 1st term, daily, 1:30 to 4:30. Professor Griffith.

4.—FREE-HAND DRAWING. Free hand drawing with water-colors. Wash drawing for reproduction by the half-tone process. Sophomore, 2d term, daily, 1:30 to 4:30. Professor Griffith.

5.—DRAWING. This course aims to meet the needs of two classes of students: Students who wish training in artistic perception and graphic expression, for its general culture value; and technical students, to whom some drawing is essential. It consists of the first eighteen weeks' work, covered by courses 1, 3, 9, and 10, three hours daily.

6.—PAINTING. Painting with water-color, oil, or pastille, from still life. Students begin the study of color in this class. The observation and reproduction of simple masses of form and color. Freshman, 2d term; Sophomore, 1st term and 2d term; daily, 1:30 to 4:30. Professor Griffith.

7.—PAINTING. Painting with water-color, oil, or pastille, from life. Portrait painting is the object of the instruction given in this class. Junior and Senior, 1st and 2d terms, daily, 1:30 to 4:30. Professor Griffith.

8.—Painting. Painting of landscape and human figures in the open air. Junior and Senior, 2d term, daily, 1:30 to 5:30. Professor Griffith.

9.—Composition. Throughout the entire course every student is required to study the pictorial compositions of the masters, and each week to make one original composition upon a given subject. Tuesday, at 1:30. Professor Griffith.

10.—Perspective. Elementary perspective, shadows, and reflections. Freshman, 1st term, Thursday, at 1:30. Professor Griffith.

11.—Perspective. Advanced perspective; the application of the principles of perspective to pictorial purposes. Freshman, 2d term, Thursday, at 1:30. Professor Griffith.

12.—Ornamental Design. The anatomy of pattern. Sophomore, 1st term, (*a*), Wednesday, 4:30 to 5:30. The planning of ornament. Sophomore, 1st term, (*b*), and 2d term, Thursday, 4:30 to 5:30. Professor Griffith.

13.—Ornamental Design. The application of ornament. Junior, 1st and 2d terms, Monday, 4:30 to 5:30. The history of ornament. Senior, 1st and 2d terms, Thursday, at 11:15. Professor Griffith.

## EDUCATION.

1.—The History of Education. A survey of both ancient and modern periods. Studies of typical movements in education, the development of national systems, and the work of great educators. 1st and 2d terms, daily, at 4:30. Professor Olin.

## ELOCUTION.

Courses 1 to 8 are arranged to cover two years of consecutive work in the University; the first four courses are to be taken the first year, the four remaining courses the second year. Course 9 is for special students only.

1.—Principles of Vocal Expression. Purpose in utterance; types of utterance—formulative, discriminative, emotional, and volitional. Study of grouping. Text, Chamberlain and Clark. Two hours a week, by appointment. Assistant Professor Frazier.

2.—American Prose and Poetry. The critical analysis and study for purpose of oral interpretation of some of the standard poems and prose compositions of American authors. Two hours a week, by appointment. Assistant Professor Frazier.

3.—Lecturing and Reading. Training in the use of the manuscript in the presentation of original productions. Practice in formu-

lating, outlining and preparing papers and informal talks on various occasions. Suggestions for reading articles other than one's own. Two hours a week, by appointment. Assistant Professor Frazier.

4.—English Prose and Poetry. A study of a limited number of representative English poems and prose compositions from the standpoint of their vocal interpretation. Two hours a week, by appointment. Assistant Professor Frazier.

5.—The Modern Drama. Students in this course will be given training in dramatic construction and opportunity to study in some detail the theory of stage business in the presentation of modern plays. Two hours a week, by appointment. Assistant Professor Frazier.

6.—Platform Work. Particular preparation for public reading, lecturing, and impersonation. Each student will arrange and present in public an entire program. Two hours a week, by appointment. Assistant Professor Frazier.

7.—Shakspere. One comedy and one tragedy will be studied and the student will be required to memorize some of the more important scenes and to impersonate the various characters. Two hours a week, by appointment. Assistant Professor Frazier .

8.—Methods of Teaching Reading. The aims of this course are: (1) To present a brief review of past elocutionary methods; (2) to lay out a definite and graded method of expressional developments; and (3) to give the student opportunity to teach under the direction of the instructor. Two hours a week, by appointment. Assistant Professor Frazier.

9.—Special Conferences. The object of this course is to give a student an opportunity to enroll for special work in oral expression without becoming a regular student in the school. Hours by appointment. Assistant Professor Frazier.

## ENGLISH LANGUAGE AND LITERATURE.

1.—English Literature. General history, supplemented with class study of representative authors and with required library reading. Text-books, Pancoast's Introduction to English Literature and Pancoast's Standard English Poems. Required of all Freshmen in the School of Fine Arts. 1st or 2d terms: 1st term, at 9; 2d term, at 3:30. Assistant Professor Bryant.

2.—English Literature. (*a*) English literature of the eighteenth century. Text-book, Gosse's History of Eighteenth Century Literature. Lectures, discussions, essays, and collateral library work. (*b*) An elementary course in English poetry; text-book, Pan-

coast's Standard English Poems. Lectures, reports, and collateral library work. Required of all Sophomores in the School of Fine Arts. 1st or 2d terms, daily: 1st term, at 2:30; 2d term, at 11:15. Assistant Professor Lynn.

3.—Rhetoric and English Composition. Outlines of rhetoric, with exercises and themes. Required of all Freshmen in the School of Fine Arts. 1st or 2d term, daily: 1st term, at 8, 9, 4:30, and at other hours to be arranged; 2d term, at 8, 9, 2:30, and at other hours to be arranged. Assistant Professor Lynn and assistants.

4.—Narration and Description. Study of general principles, with exercises. Required of all Juniors in the School of Fine Arts. 1st term: Lectures Monday, Wednesday, and Friday, at 8; conferences Tuesday and Thursday, at 8. Associate Professor O'Leary and assistants.

5.—Exposition and Argument. Study of general principles, with exercises and briefs. 2d term: Lectures Monday, Wednesday, and Friday, at 8; conferences Tuesday and Thursday, at 8. Assistant Professor Raymond and assistants.

## GERMAN.

1.—Outline of Grammar. The first eighteen lessons of Otis, with composition exercises. Carruth's Reader, about fifty pages. 1st term, daily, at 8, 9, 11:15, and 2:30. Assistant Professors Engel and Corbin.

2.—Carruth's Reader, completed, Zschokke, Kleist, Heyse, (100 pp.), and Schiller's Wilhelm Tell (complete). Also special exercises on case government and auxiliary verbs (Otis, lessons 25-27), and sight-reading. 2d term, daily, at 8, 9, 11:15, and 2:30. Assistant Professors Engel and Corbin.

3.—(1) Lessing's Minna von Barnhelm. Geschichte des 30-jährigen Krieges. Outline of German literature in dictations and lectures. Sight-reading. 1st term, daily, at 8, 9, 11:15, and 2:30. Assistant Professors Engel and Corbin.

4.—Schiller's Wallenstein (complete). 2d term, daily, at 8, 9, 11:15 and 3:30. Assistant Professors Engel and Corbin.

## GREEK.

17.—History of Greek Art. Lectures, recitations, private reading, writing of themes. 2d term, daily, at 11:15. Professor Wilcox.

## MUSICAL THEORY.

Professor SKILTON.
Professor PREYER.

Courses 1 to 5, inclusive, are required of all students in music. Courses 6 to 8, inclusive, are required of all students in the collegiate courses in music, and are optional for students in the artist courses.

1.—HARMONY. The study of tone relations, scales, intervals; the formation and progression of chords, concords and discords, and modulations. The practical work consists of the harmonization of short musical sentences, chants, chorals, and original melodies; the study of all chord progressions at the piano and their recognition by the ear. Freshman, throughout the year, Tuesday and Friday, at 2:30. Professor Skilton.

2.—HARMONY. The study of inharmonic tones (suspensions, passing notes, etc.), the harmonization of original melodies, with practical applications at the piano. Sophomore, 1st term, Tuesday and Friday, at 3:30. Professor Skilton.

3.—MUSICAL ANALYSIS. The simple homophonic and polyphonic forms; the phrase, period, two-part song, three-part song, and song with trio. Classical models with original work. Sophomore, 2d term, Tuesday and Friday, at 3:30. Professor Skilton.

4.—COUNTERPOINT. The different orders of single counterpoint in two, three, four or more parts. Combined counterpoint. Contrapuntal exercises applied to higher problems, such as the treatment of chorals, etc. Junior, 1st term, Monday, at 2:30. Professor Preyer.

5.—MUSICAL ANALYSIS. The variation and rondo forms; the sonatine and sonata forms. The analysis of Beethoven's sonatas. Junior, 1st term, Thursday, at 2:30. Professor Preyer.

6.—MUSICAL COMPOSITION. The homophonic forms, with original work in the classical dance forms—minuet, gavotte, etc.—and the accompaniment for the vocal solo and the violin solo. Open only to those who show talent for composition. Senior, 1st term, Wednesday, at 3. Professor Preyer.

7.—DOUBLE COUNTERPOINT; CANON AND FUGUE. Double counterpoint in the octave, tenth, and twelfth. The various forms of canon and their application to higher problems. The most essential parts of the fugue, such as the subject, answer, counter-theme, episode, stretto. The composition of the fugue as a whole, in two, three and four parts. Senior, Monday, at 9, 1st term. Professor Preyer.

8.—INSTRUMENTATION. The nature, characteristics and treatment of the various instruments of the orchestra. The string quar-

tette. Orchestral accompaniment. The overture, symphony. The cantata. Practical work for the University Orchestra. Senior, 2d term, Wednesday, at 3. Professor Skilton.

## ORGAN.

Professor SKILTON.

Courses 1 to 3, inclusive, are required of all organ students.

1.—MANUAL AND PEDAL STUDIES. Merkel and Archer. Junior, throughout the year, twice a week, by appointment. Professor Skilton.

2.—STUDIES AND SELECTIONS. Dudley Buck's Choir Accompaniment; Bach's Easy Preludes and Fugues; Buck's Studies in Pedal Phrasing; selections from Church and Concert Organist, Eddy, The Organist, Whiting, etc. Junior, twice a week throughout the year, by appointment. Professor Skilton.

3.—CHORUS ACCOMPANIMENT, FUGUES, AND STANDARD COMPOSITIONS. Extempore playing; Bach's Fugues; sonatas by Mendelssohn, Merkel, and Rheinberger; accompaniment for solos, masses, cantatas, and oratorios; compositions by Best, Guilmant, Ritter, Saint-Saëns, Thiele, Widor, Eddy, etc. Senior, twice a week throughout the year, by appointment. Professor Skilton.

## PIANOFORTE.

Professor PREYER.
Miss GREISSINGER.
Miss COOKE.
Miss MILLER.
Miss RIGHTER.
Miss WIEDEMANN.

Courses 1 to 4, inclusive, and course 6, are open only to students of the School of Fine Arts. Course 5 is open only to graduates in piano.

1.—TECHNIC. Hanon: Virtuoso Pianist. A limited number of studies from the following: Cramer-Buelow, sixty selected etudes; Preyer, twenty etudes, op. 35 (Shirmer); Bach, two- and three-part inventions (Litolff 1742), etc. Sonatas by Haydn, Mozart, Beethoven. Selections from classic and modern compositions. Freshman, throughout the year, twice a week, by appointment. Professor Preyer and assistants.

2.—Philipp: Practical Exercises. Etudes, selected according to the needs of the pupil, from Clementi's Gradus ad Parnassum; Jensen, op. 32; MacDowell, op. 36; Haberbier, Etudes Poesies, op. 53; Bach, English Suites. Concertos by Mozart, Hummel, etc.

Selections from classic and modern compositions. Sophomore, throughout the year, twice a week, by appointment. Professor Preyer and assistants.

3.—Philipp: Daily Exercises. Etudes from Moscheles, op. 70; Seeling, Concert Etudes, op. 10; Chopin, Preludes; Bach, Well-tempered Clavichord (Reinecke, B. and H.); concertos by Beethoven, Mendelsshon, etc ; concert pieces by classic and modern composers. Junior, throughout the year, private lessons, twice a week, by appointment. Professor Preyer.

4.—Philipp: Daily Exercises (continued). Philipp, etudes for the left hand; etudes from Chopin, op. 10 and op. 25; Rubinstein, op. 23, etc. Sonatas and Concertos by Beethoven, Weber, Grieg, etc. Concert pieces by modern composers. Senior, throughout the year, private lessons, twice a week, by appointment. Professor Preyer.

5.—A course for the study of pianoforte methods, aiming to develop independence of the fingers, and acquiring correct habits of practicing the scales, arpeggios, trills, octaves, chords, etc. Freshman and Sophomore, throughout the year, Wednesday, 3:30 to 4:30. Miss Greissinger.

GRADUATE COURSE.

6.—Philipp (continued). Modern etudes, by Liszt, MacDowell, etc.; selections from Lebert & Stark, Pianoforte School, book IV. Transcriptions of Bach's organ fugues, by Liszt, Tausig, D'Albert, etc. Modern concert pieces and concertos. Twice a week throughout the year. Professor Preyer.

## PHILOSOPHY.

1.—Elementary Psychology. A part of the term, approximately one-third, is devoted to an exposition of the mental processes of deductive logic. Hyslop's Logic and Argument is used as a basis for this work. The remainder of the course is devoted to the study of the mental processes in general, and James's Psychology, Briefer Course, serves as a text. 1st and 2d terms, daily, at 8. Assistant Professor Hogg.

## PHYSICAL EDUCATION.

1.—Marching. Elementary work in free hand, dumb-bells, wands, and clubs; hygienic work on the apparatus; gymnastic games for recreation. 1st term. Miss Fish.

2.—Advanced Work in Free-hand. Calisthenics; and hygienic work on the apparatus; athletics of an all-around nature; games for skill and physical judgment. 2d term. Miss Fish.

3.—Educational Work with Light and Heavy Apparatus. Fancy marching; games requiring skill and self-control; squad leading in calisthenics and apparatus work. 1st term. Miss Fish.

4.—Specializing in Some Line of Exercise. Fencing and broadsword; conducting games, competitions, and exhibitions. 2d term. Miss Fish.

## PHYSICS.

11.—Acoustics and Optics. A course of about twenty lectures, with demonstrations, upon the scientific basis of harmony and of painting. Required of students in the School of Fine Arts. 2d term, by appointment. Professor Blake.

## VIOLIN.

Professor Wylie.

Courses 1 to 4, inclusive, are required of all violin students.

1.—Schradieck's Finger Technic; Hermann's Violin School, book I; Hermann's School of Scales, book I; Kayser's Thirty-six Etudes, books II and III; violin duets by Dancla, Mazas, Viotti; selections from the simpler compositions of Hermann, Singelee, Alard, De Beriot, Dancla, Papini, Leonard, and Daube. By appointment.

2.—Hermann's Violin School, Book II; Scales and Technic, by Bendix and Schradieck; Hermann's School of Scales, book II; Kreutzer's Forty Studies; sonates selected from Mozart and Handel; violin duets by Mazas; concertos from the early Italian masters; selections from the compositions of David, De Beriot, Viotti, Rode, Kreutzer, Sauret, Papini, Handel, and Bazzini. Ensemble playing. By appointment.

3.—Scales and Technic by Bendix (continued); Hermann's School of Scales, book III; Fiorillo's Thirty-six Etudes; concertos by De Beriot, Spohr, and Mozart. Selections from the compositions of Sauret, David, Wieniawski, Hauser, Vieuxtemps, Bazzini, and Bohm; sonates for violin and piano, selected from Beethoven, Grieg, and Tartini. Ensemble playing. By appointment.

4.—Scales and Technic by Schradieck; Hermann's School of Scales, book III; Rode's Thirty-six Caprices; Dancla's Twenty Etudes; concertos by Spohr, Mendelssohn, Beethoven, and Bruch; sonates selected from J. S. Bach; compositions by Sarasate, Hubay, Raff, Vieuxtemps, Wieniawski, Sauret, Ernst, Brahms, and Ries; violin duets by Spohr. By appointment.

## VOCAL CULTURE.

Professor HUBACH.
Mrs. LYONS.
Miss FLINTOM.

Courses 1 to 5, inclusive, are required of all students taking the four years' work in vocal culture; courses 1, 2, 3 and 5 are open to all other musical students. Course 5 is required of all Sophomores. Course 8 is required of all students wishing to graduate as teachers.

1.—TONE-PLACING. Dictation exercises for the special needs of the individual voice. Sustained tones. Breath control and the true legato. The study of conditions necessary for the poising of the voice. The Italian vowels. Technical exercises selected from Vannini, Lamperti, Sieber, Abt, Panofka, Garcia, and Shakspere. Simple English and Italian songs. Freshman, twice a week throughout the year, by appointment.

2.—VOICE EXTENSION. Development of tone. Breath control. Exercises for flexibility from Lamperti, Nava, Concone, Vannini, Bordogni, Sieber, and Shakspere. English and Italian ballads. German lieder. Church solos. Sophomore, twice a week throughout the year, by appointment.

3.—STUDY OF TONE COLOR. Exercises for flexibility, continued. Embellishments. Exercises from Concone, Panofka, Marchesi, Garcia, Panseron, and Rossini. German lieder, English oratorio, and church solos. Junior, twice a week throughout the year, by appointment.

4.—METHODS OF TONE-PLACING AND BREATHING. A comparative study. Exercises for bravura singing from Lamperti. Flexibility and finishing exercises from the masterpieces of vocalization. Stage deportment. Selections from Italian opera and English oratorio. Senior, twice a week throughout the year, by appointment. Professor Hubach.

5.—SIGHT SINGING. Sound relationship. Time relationship. Rhythm. Dictation exercises. Unison, two-part, three-part, and four-part. Professor Hubach.

6.—OPERA. Solo and chorus drill in the standard operas. Those taking this course are united with other singers from the University and city to form the school of grand opera. One presentation of opera will be given each year.

7.—ORATORIO. Solo and chorus drill in the standard works. Singers from the University and city are invited to form the Oratorio Society. Presentation of oratorio will be given each year. This society annually engages the Chicago Symphony Orchestra and eminent soloists for the May festival.

8.—TEACHERS' COURSE. For students desiring to prepare themselves especially for teaching. Text: Manual Garcia. Professor Hubach.

# VI.—The School of Pharmacy.

## Faculty.

Frank Strong, Ph. D., President.

Lucius E. Sayre, Ph. M., Dean. Professor of Pharmacy.

Ephriam Miller, Ph. D., Professor of Mathematics.

Edgar H. S. Bailey, Ph. D., Professor of Chemistry.

Erasmus Haworth, Ph. D., Professor of Mineralogy.

William C. Stevens, M. S., Professor of Botany.

Henry B. Newson, Ph. D., Associate Professor of Mathematics.

Marshall A. Barber, A. M., Associate Professor of Cryptogamic Botany and Bacteriology.

Edward Bartow, Ph. D., Associate Professor of Chemistry.

Ida H. Hyde, Ph. D., Associate Professor of Physiology.

Raphael D. O'Leary, A. B., Associate Professor of English.

William E. Higgins, LL. B., Associate Professor of Law.

Elmer F. Engel, A. M., Assistant Professor of German.

George L. Lincoln, A. M., Assistant Professor of French.

Martin E. Rice, M. S., Assistant Professor of Physics.

L. D. Havenhill, Ph. M., Secretary. Assistant Professor of Pharmacy.

Alma Le Duc, Ph. B., Assistant Professor of French.

Charles M. Sterling, A. B., Assistant Professor of Pharmacognosy.

John N. Van Der Vries, Ph. D., Assistant Professor of Mathematics.

Margaret Lynn, A. M., Assistant Professor of English.

Charles H. Ashton, A. M., Assistant Professor of Mathematics.

David F. McFarland, M. S., Assistant Professor of Chemistry.

Ralph E. Bassett, A. M., Assistant Professor of French.

George F. Kay, Assistant Professor of Mineralogy.

Herbert W. Emerson, B. S., Instructor in Pharmacy.

## Scope of the School.

The object of this school is to give its students a thorough practical training in all of those branches connected with the pharmaceutical profession in its various departments. A special emphasis is purposely placed upon chemistry, as this is the foundation of all pharmaceutical work. In the department of pharmacognosy there are offered facilities which are deemed adequate to this important branch of pharmacy and medicine.

The three courses offered by the school are arranged logically and progressively; the instruction is given according to modern methods, and in the spirit of those principles which, in their application to other classes of modern technical schools, have proved so eminently successful.

**Degrees.** The courses of study in the School of Pharmacy lead to the following degrees:

Bachelor of Science.
Pharmaceutical Chemist.

### Requirements for Admission.

There are two methods of admission to the School of Pharmacy: First, by examination; second, by certificate.

**By Examination.** Times and place of examination for subjects required for admission to the School of Pharmacy will be found on page 68 of this catalogue, under "The College."

**By Certificate.** Candidates may enter the School of Pharmacy on certificates from the schools indicated in the next paragraph. The plan of entrance by certificates, noted under "The College," page 69, is followed.

FOR THE TWO- AND THREE-YEAR COURSES.

Candidates for admission to these courses must present certificates of graduation from accredited schools, or, in lieu of this, must present certificate covering work equal to that covered by graduation from the eighth grade of a grammar school in arithmetic, United States history, geography, English grammar, and civil government, and, in addition, either be examined in, or present certificates from high schools, academies or colleges for, physics, Carhart and Chute, or equivalent, and Latin, Bennett's Latin Grammar, or equivalent.

These latter subjects, in which the student may be deficient, may

be made up during the first year of attendance, either in a special class or at the Lawrence high school.

FOR THE FOUR-YEAR COURSE.

Candidates for admission to the four-year course must conform, by examination or certificate, to the requirements for entrance to the Freshman year of the College.

### Special Students.

Special students, not candidates for a degree, may be admitted to the School of Pharmacy without conforming to the requirements for entrance. The admission of such students is under the control of the Dean, and his certificate of recommendation must be procured before the candidate presents himself to the Registrar.

### Expenses.

By legislative enactment, a matriculation fee of five dollars (to be paid but once) must be charged each student of Kansas entering the School of Pharmacy. All students are required to pay an incidental fee of twenty-five dollars. Non-residents of Kansas must pay a matriculation fee of ten dollars and an incidental fee of thirty-five dollars. If the student so elects, one-half of the incidental fee may be paid at the beginning of each term. A fee of five dollars is required for diploma.

Further information will be found in regard to expenses and self-help under "The College," page 86 of this catalogue.

### The Pharmaceutical Society.

This society was organized in December, 1886, by the students and instructors of the department, for the purpose of assisting each other in the study of sciences especially related to the art of pharmacy, in the practical applications of the same, and for friendly intercourse. Meetings are held biweekly during the school year.

As an adjunct to the society, an "annex" was established in 1890, whose aim it is to secure positions for graduates, and clerks for employers, who are graduates of the school.

### Library.

The School possesses an extensive library, and is the regular recipient of the leading pharmaceutical journals and periodicals of America, England, Germany, and France.

For the convenience of students in chemistry and pharmacy, a branch library is provided in the building and adjacent to the chemical and pharmaceutical laboratories, where all the principal reference books and periodicals may be found.

### Collections.

The Pharmacy School possesses an extensive herbarium of medicinal plants, together with a collection of photographs representing nearly 200 species. This, in conjunction with the large herbarium of the botanical department, is available to students. Several hundred microscopical slides are at hand for use with the projection lantern, showing various drugs in cross and longitudinal section, as well as in powdered form; a large assortment of lantern slides, illustrating plants, drugs, prescriptions, pharmacies, and places and subjects of pharmaceutical interest; several cases of crystal models; an extensive collection of official and unofficial salts, alkaloids, drugs and medicines, besides numerous smaller collections of particular interest.

### Equipment.

The School of Pharmacy is located in the northwest corner of the campus, and occupies the first two floors and basement of the east wing of the Chemistry and Pharmacy Building.

The basement of the pharmacy department contains two research laboratories and the general pharmacy stock room. The contents of this room are invoiced under the direction of an instructor, every year, by students, as part of their business training and as part of their practical drug-store work.

On the first floor are the two large general laboratories, balance-room, supply-room and the office and private laboratory of the Junior assistant. The Junior laboratory accommodates sixty students and is equipped with desks, lockers, and individual gas- and water-supplies. The Senior laboratory is similarly equipped and accommodates fifty-six students. Opening from this on the east is a special balance room, provided with analytical balances for the exclusive use of the pharmacy students. The supply-room is conveniently located between the two laboratories. All the material necessary for the special courses in pharmacy can be obtained here.

The offices and private laboratories of the Dean and the secretary, the lecture-room, museum of pharmacognosy and the prescription research laboratory are on the second floor.

The lecture-room, with a seating capacity of 100, is provided with a large lecture-table and abundantly supplied with special pharmaceutical apparatus. The museum of pharmacognosy is directly above the Senior laboratory, and is devoted to the branches of pharmacognosy, pharmacal botany, and microscopy. Ample material is supplied for elucidation of these three important branches of modern pharmacy. In this room is one of the latest improved Bausch & Lomb stereopticons, with microscopical projection attachment, an instrument indispensable to the proper treatment of these subjects.

The prescription research laboratory is located at the rear of the lecture-room, and is equipped after the manner of a regular prescription pharmacy. It is furnished with a thirty-foot work-table provided with gas and water, three large double prescription cases each differing in style and manner of equipment, and fifty feet of tincture shelving. On these shelves are found various patterns of shop-bottles offered to American pharmacists. The entire equipment of the room has been carefully selected, with a view to give comprehensive and varied instruction. In this room practical training is given in the preparation of medicines and the compounding of difficult prescriptions.

Laboratory instruction for pharmacy students is also given in the laboratories of the following departments: Chemistry, botany, mineralogy, physiology, and physics.

**Apparatus.**

For the various practical courses offered by this school a large amount of laboratory appparatus, of domestic and foreign types, is supplied. The various laboratories are equipped for manufacturing purposes, so that any preparation of the United States pharmacopœia can be made by any of the official methods, and, in addition, appliances and materials are at hand for the unofficial and extra-pharmacopœial products.

The lecture-table is abundantly supplied with illustrative apparatus, so that the student may see before him the various processes in operation which may be carried on in the laboratories and at the prescription counters. Every attention has been given to illustrate pharmacy in all its phases.

The following is a partial list of special apparatus: Bausch & Lomb projection lantern and stereopticon, Laurent half-shade polariscope, Zeiss saccharimeter, spectroscope, refractometer; microscopes: Bausch & Lomb, Spencer, Leitz, etc.; balances: analytical, prescription, counter, solution, torsion, specific gravity, etc.; hydrometers, Beaume and specific gravity, single and in sets; lactometers, urinometers, alcoholometers, etc.; microtomes, nitrometers, combustion furnaces; Bunsen burners, various patterns; pharmaceutical stills, apparatus for fractional distillation and evaporation *in vacuo*, tablet machines, suppository molds and presses, drug mills, special percolators and apparatus for hot and cold extraction, continuous extractors, pill machines, coaters, etc.

## Courses of Study.

The School of Pharmacy offers three complete courses of study, one of two years and one of three years—both leading to the degree of pharmaceutical chemist—and one of four years, leading to the degree of bachelor of science.

**The Two-year Course.** This is the regular course in pharmacy, first established by an act of the legislature, which leads to the degree of pharmaceutical chemist (Ph. C.) Graduates of this course may become registered pharmacists in Kansas without examination upon presenting to the State Board of Pharmacy evidence of having had two or more years of practical experience in a drug-store. The curriculum is confined to pharmaceutical subjects, and prepares directly for drug-store and dispensing work. The higher work of the other courses gives greater breadth of training, and prepares students for service with larger concerns and with manufacturing chemists.

**The Three-year Course.** The committee appointed by the Kansas Pharmaceutical Association to report on the School of Pharmacy recommended that the school inaugurate a *three-year course* so that students who so desire could distribute their pharmaceutical education over this period of time. This course is especially recommended to those students who have had no drug-store experience, and to those who desire to avail themselves of the social advantages offered to college students. By special arrangement with the State Board of Pharmacy, graduates of this course may become registered pharmacists without examination upon the completion of one year of practical experience in a drug-store. The course leads to the degree of Ph. C., and, besides the diploma, a special certificate of proficiency is issued by the Dean upon the completion of the course of study outlined.

**The Four-year Course.** This course, leading to the degree of bachelor of science in pharmacy, from which the student graduates on a plane with the regular students of the College, opens the door, as does the bachelor of arts degree, to the degree of master of arts or doctor of philosophy, should the student desire to pursue his studies to that extent, and thus prepare himself for the higher calling of educational work.

**Registration with State Boards of Pharmacy.**

To all graduates who have had four years or more of practical experience (allowing two years for time spent in college) a credential showing same will be given. This credential will be in the form of a special lithographed certificate signed by the Dean, setting forth the facts. Those graduates who have not completed these requirements as to experience will receive this certificate when these requirements have been satisfied.

Arrangements have been made whereby holders of this special certificate may register without examination in several of the neighboring states and territories. Negotiations are now in progress with other states.

## Two-year Course.

**Leading to the Degree of Pharmaceutical Chemist.**

JUNIOR YEAR.

*First Term:*

Descriptive Pharmacy, (*a* and *b*), at 3:30. Assistant Professor Havenhill.

Pharmacal Botany, (*a* and *b*), 10:15 to 12:15. Assistant Professor Sterling.

Physical Manipulation, (*a*), at 4:30. Assistant Profesor Havenhill.

Introductory Chemistry, (*a* and *b*), 1:30 to 3:30. Associate Professor Bartow.

Pharmacognosy, (*b*), at 4:30. Assistant Professor Havenhill.

*Second Term:*

Systematic Botany, (*b*), 8 to 10. Assistant Professor Sterling.

Pharmacognosy, (*a*), at 3:30. Assistant Professor Havenhill.

Inorganic Medicinal Salts, (*b*), at 3:30. Assistant Professor Havenhill.

Galenical Preparations, (*a* and *b*), 10:15 to 12:15. Mr. Emerson.

Qualitative Analysis, (*a* and *b*), 1:30 to 3:30. Assistant Professor McFarland.

SENIOR YEAR.

*First Term:*

Vegetable Histology and Microchemical Technique, (*a*), 8 to 10. Assistant Professor Sterling.

Microscopical Study of Drugs, (*b*), 8 to 10. Assistant Professor Sterling.

Theory and Practice of Pharmacy and Pharmaceutical Chemistry, (*a* and *b*), at 1:15. Professor Sayre.

Physiology, (*a*), 1:30 to 3:30. Associate Professor Hyde.

Elementary Mineralogy, (*b*), 1:30 to 3:30. Professor Haworth.
Quantitative Analysis, (*a*), 3:30 to 5:30. Professor Bailey.
Physiological Chemistry, (*b*), 3:30 to 5:30. Professor Sayre and Mr. Emerson.

*Second Term:*

Dispensing, (*a*), 8 to 10. Professor Sayre and Mr. Emerson.
Thesis, (*b*), 8 to 10. ———.
Organic Materia Medica and Pharmacology, (*a* and *b*), at 11:15. Professor Sayre.
Toxicology, (*a* and *b*). By appointment. Professor Bailey.
Organic Chemistry, (*a* and *b*), 3:30 to 5:30. Associate Professor Bartow.
Pharmaceutical Testing, (*a*), 1:30 to 3:30. Professor Sayre and Assistant Professor Havenhill.
Plant Analysis, (*b*), 1:30 to 3:30. Professor Sayre and Assistant Professor Havenhill.

## Three-year Course.

**Leading to the Degree of Pharmaceutical Chemist.**

SOPHOMORE YEAR.

*First Term:*

Descriptive Pharmacy, (*a* and *b*), at 3:30. Assistant Professor Havenhill.
Physical Manipulation, (*a*), at 4:30. Assistant Professor Havenhill.
Introductory Chemistry, (*a* and *b*), 1:30 to 3:30. Associate Professor Bartow.

*Second Term:*

Rhetoric and English Composition, (*a* and *b*), at 8. Assistant Professor Lynn.
Qualitative Analysis, (*a* and *b*), 1:30 to 3:30. Assistant Professor McFarland.
Organic Chemistry, (*a* and *b*), 3:30 to 5:30. Associate Professor Bartow.

JUNIOR YEAR.

*First Term:*

Pharmacal Botany, (*a* and *b*), 10:15 to 12:15. Assistant Professor Sterling.
Physiology, (*a*), 1:30 to 3:30. Associate Professor Hyde.
Elementary Mineralogy, (*b*), 1:30 to 3:30. Assistant Professor Kay.
Quantitative Analysis, (*a*), 3:30 to 5:30. Professor Bailey.
Pharmacognosy, (*b*), at 4:30. Assistant Professor Havenhill.

*Second Term:*

Systematic Botany, (*b*), 8 to 10. Assistant Professor Sterling.

Galenical Preparations, (*a* and *b*), 10:15 to 12:15. Mr. Emerson.

Pharmaceutical Testing, (*a*), 1:30 to 3:30. Professor Sayre and Assistant Professor Havenhill.

Plant Analysis, (*b*), 1:30 to 3:30. Professor Sayre and Assistant Professor Havenhill.

Pharmacognosy, (*a*), 3:30. Assistant Professor Havenhill.

Inorganic Medicinal Salts, (*b*), 3:30. Assistant Professor Havenhill.

SENIOR YEAR.

*First Term:*

Vegetable Histology, (*a*), 8 to 10. Assistant Professor Sterling.

Microscopical Study of Drugs, (*b*), 8 to 10. Assistant Professor Sterling.

Theory and Practice of Pharmacy, and Pharmaceutical Chemistry, (*a* and *b*), 10:15. Professor Sayre.

Physiological Chemistry, (*a* and *b*), 3:30 to 5:30. Professor Sayre and Mr. Emerson.

*Second Term:*

Dispensing, (*a*), 8 to 10. Professor Sayre and Mr. Emerson.

Thesis, (*b*), 8 to 10. ———.

Organic Materia Medica and Pharmacology, (*a* and *b*), at 11:15. Professor Sayre.

Toxicology (by appointment). Professor Bailey.

Practical Exercises, (*a*), 1:30 to 3:30. Assistant Professor Havenhill.

Library Work (*b*). Hours by appointment. Professor Sayre.

## Four-year Course.

**Leading to the Degree of Bachelor of Science.**

FRESHMAN YEAR.

*First Term:*

Rhetoric and English Composition, (*a* and *b*), at 9. Assistant Professor Lynn.

Algebra and Trigonometry, (*a* and *b*), at 11:15. Assistant Professor Ashton.

Introductory Chemistry, (*a* and *b*), 1:30 to 3:30. Associate Professor Bartow.

*Second Term:*

Analytic Geometry, (*a* and *b*), at 8. Associate Professor Newson.

German, Preparatory to Scientific German, (*a* and *b*), at 10. Professor Carruth.

Qualitative Analysis, (*a* and *b*), 1:30 to 3:30. Assistant Professor McFarland.

SOPHOMORE YEAR.

*First Term:*

General Physics, (*a* and *b*), at 9. Assistant Professor Rice.

Elementary Structural Botany, (*a* and *b*), 1:30 to 3:30. Professor Stevens and Assistant Professor Sterling.

Quantitative Analysis, (*a* and *b*), 3:30 to 5:30. Professor Bailey.

*Second Term:*

Scientific German, (*a* and *b*), at 8. Assistant Professor Engel.

Physical Measurements and Methods, (*a* and *b*), 1:30 to 3:30. Assistant Professor Rice.

Bacteriology, (*a* and *b*), 3:30 to 5:30. Associate Professor Barber.

JUNIOR YEAR.

*First Term:*

Descriptive Pharmacy, (*a* and *b*), at 3:30. Assistant Professor Havenhill.

Scientific French, (*a* and *b*), at 11:15. Assistant Professor Lincoln.

Vegetable Histology, (*a* and *b*), 1:30 to 3:30. Professor Stevens and assistant.

Pharmacognosy, (*b*), at 4:30. Assistant Professor Havenhill.

*Second Term:*

Pharmacognosy, (*a*), at 3:30. Assistant Professor Havenhill.

Inorganic Medicinal Salts, (*b*), at 3:30. Assistant Professor Havenhill.

Galenical Preparations, (*a* and *b*), 10:15 to 12:15. Mr. Emerson.

SENIOR YEAR.

*First Term:*

Microscopical Study of Drugs, (*b*), 8 to 10. Assistant Professor Sterling.

Theory and Practice of Pharmacy, and Pharmaceutical Chemistry, (*a* and *b*), at 10:15. Professor Sayre.

Physiology, (*a*), 1:30 to 3:30. Associate Professor Hyde.

Elementary Mineralogy, (*b*), 1:30 to 3:30. Professor Haworth.

Physiological and Medicinal Chemistry, (*a* and *b*), 3:30 to 5:30. Professor Sayre and Mr. Emerson.

*Second Term:*

Dispensing, (*a*), 8 to 10. Professor Sayre and Mr. Emerson.

Thesis, (*b*), 8 to 11:15. ———.

Organic Materia Medica and Pharmacology, (*a* and *b*), at 11:15. Professor Sayre.

Toxicology, (*a* and *b*), by appointment. Professor Bailey.

Organic Chemistry, (*a* and *b*), 3:30 to 5:30. Associate Professor Bartow.

Plant Analysis, (*b*), 1:30 to 3:30. Professor Sayre and Assistant Professor Havenhill.

Pharmaceutical Testing, (*a*), 1:30 to 3:30. Professor Sayre and Assistant Professor Havenhill.

# Courses of Instruction.

## BOTANY AND PHARMACOGNOSY.

Professor STEVENS.
Professor SAYRE.
Associate Professor BARBER.
Assistant Professor STERLING.
Assistant Professor HAVENHILL.

1.—PHARMACAL BOTANY. An introduction to morphology and taxonomy of phanerogams, vegetable histology and microtechnique. Laboratory work, recitations, and lectures. Junior, 1st term, 10:15 to 12:15. Assistant Professor Sterling.

2.—SYSTEMATIC BOTANY. A brief introduction to cryptogams and the use of manual. Laboratory work, recitations, and lectures. Junior, 2d term, (*b*), 8 to 10. Assistant Professor Sterling.

3.—ELEMENTARY STRUCTURAL BOTANY. A study of the structure of phanerogams, with a brief introduction to fungi, algæ, mosses, and ferns. The use of a manual; field-studies. Laboratory work and lectures. 2d term, (*a* and *b*), 1:30 to 3:30. Professor Stevens, Assistant Professor Sterling, and assistant.

4.—VEGETABLE HISTOLOGY AND MICROCHEMICAL TECHNIQUE. A study of vegetable tissues and products. Open to students who have had course 3 or courses 1 and 2. Laboratory and lectures. Senior, 1st term, (*a*), 8 to 10. Assistant Professor Sterling.

5.—VEGETABLE HISTOLOGY. A study of plant tissues with special reference to their development and functions; histological technique. Laboratory work and lectures. Open to students who have taken course 3. 1st term, (*a* and *b*), 1:30 to 3:30. Professor Stevens and assistant.

6.—MICROSCOPICAL STUDY OF VEGETABLE DRUGS. A study of the structural characteristics of the official drugs; the preparation of specimens and the analysis of powdered drugs. Open to students who have had course 4 or 5. Laboratory work and lectures. 1st term, (*b*), 8 to 10. Professor Sayre and Assistant Professor Sterling.

7.—BACTERIOLOGY. Bacteriological technique. Pathogenic bacteria and other forms of economic importance. Laboratory work, reading, and lectures. 2d term, (*a* and *b*), 3:30 to 5:30. Associate Professor Barber.

8.—PHARMACOGNOSY. A study of the geographical distribu-

tion, origin and physical characteristics of crude drugs. Lectures, recitations, and laboratory work. Junior, 1st term, (*b*), at 4:30. Assistant Professor Havenhill.

9.—Pharmacognosy. A continuation of course 8, and should be preceded by it. Lectures, recitations, and laboratory work. Junior, 2d term, (*a*), at 3:30. Assistant Professor Havenhill.

## CHEMISTRY.

Professor Bailey.
Professor Sayre.
Associate Professor Bartow.
Assistant Professor Havenhill.
Assistant Professor McFarland.
Mr. Emerson.

1.—Introductory Chemistry. A study of the chemical elements and their compounds. Experimental lectures, recitations, and laboratory work. Junior, 1st term, (*a* and *b*), 1:30 to 3:30. Associate Professor Bartow and assistants.

2.—Qualitative Analysis. The isolation and identification of the important elements from mixtures and compounds. Text-book. Bailey and Cady's Guide to the Study of Qualitative Analysis. Must be preceded by course 1. Lectures and laboratory work. Junior, 2d term, (*a* and *b*), 1:30 to 3:30. Assistant Professor McFarland.

3.—Quantitative Analysis. A course especially adapted to the needs of the pharmacist, involving the simpler methods of gravimetric and volumetric analysis. Lectures and laboratory work. Must be preceded by course 2. Senior, 1st term, (*a*), 3:30 to 5:30. Professor Bailey and assistant.

4.—Quantitative Analysis. A course similar to course 3, extending over whole term. 1st term, (*a* and *b*), 3:30 to 5:30. Professor Bailey and Assistant.

5.—Organic Chemistry. A study of the hydrocarbons and their derivatives. Lectures and recitations, Monday, Wednesday, and Friday; laboratory work, Tuesday and Thursday. Must be preceded by course 1. Senior, 2d term, (*a* and *b*), 3:30 to 5:30. Associate Professor Bartow and assistant.

6.—Pharmaceutical Testing. Practical demonstrations and detail work in the detection of adulteration in medicinal chemicals. Laboratory work and lectures. Must be preceded by course 3. Senior, 2d term, (*a*), 1:30 to 3:30. Professor Sayre and Assistant Professor Havenhill.

7.—Physiological Chemistry. A brief course adapted to the

needs of the pharmacist, including the study of the carbohydrates, proteins, normal and abnormal products of animal life. Analysis of various secretions, urinalysis, etc. Laboratory work and lectures. Must be preceded by course 1. Senior, 1st term, (*b*), 3:30 to 5:30. Professor Sayre and Mr. Emerson.

8.—Physiological and Medical Chemistry. This course is offered to meets the requirements of medical students. Products of physiological interest are separated from animal tissues and organs and studied in detail. Special attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second part of the course consists of five weeks of urinalysis, embracing lectures, recitations, and work in both chemical and microscopical laboratories. 1st term, four days a week, 3:30 to 5:30. Professor Sayre and Mr. Emerson.

9.—Advanced Work in Physiological Chemistry. Analysis of such dietetics as are used in medicine and the quantitative estimation of digestive ferments; the preparation of proximate constituents from animal tissues. Must be preceded by course 8, and is open to all students who have passed that subject. Professor Sayre and Mr. Emerson.

10.—Plant Analysis. The separation and estimation of the proximate principles of plant drugs. Must be preceded by course 21. 2d term, (*b*), 1:30 to 3:30. Professor Sayre and Assistant Professor Havenhill.

11.—Advanced Plant Analysis. The separation of the alkaloidal and glucosidal principles of plants, and their identification by physical and chemical means. Required in the three- and the four-year courses. Senior, 2d term, (*a*), 3:30 to 5:30. Assistant Professor Havenhill.

12.—Drug Assaying. Advanced work in standardization of crude drugs and their preparation, and the valuation of chemicals.

13.—Plant Analysis. A systematic course of advanced work in the analysis of the chemical constituents of plants.

14.—Analysis of Nostrums. Determination of composition of articles with secret formulas.

## ENGLISH.

Assistant Professor Lynn.

1.—Rhetoric and English Composition. Outlines of rhetoric, with exercises and themes. Required of all Freshmen in the School of Pharmacy. 1st or 2d term, daily: 1st term, at 8, 9, 4:30, and at other hours to be arranged; 2d term, at 8, 9, 2:30, and at other hours to be arranged. Assistant Professor Lynn.

## FRENCH.

Assistant Professor LINCOLN.
Assistant Professor LE DUC.
Assistant Professor BASSETT.

1.—ELEMENTARY COURSE. Grammar (Fraser and Squair) and easy reading. Drill in pronunciation and in forms. 1st term. Five divisions. Daily, at 8, 9, 10:15, 11:15, or 1:30. Assistant Professor Lincoln, Assistant Professor Le Duc, or Assistant Professor Bassett. Prerequisite: Three years of Latin or three years of German.

2.—ELEMENTARY COURSE. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition. 2d term. Four divisions. Daily, at 8, 9, 11:15, or 1:30. Assistant Professor Lincoln, Assistant Professor Le Duc, or Assistant Professor Bassett.

3.—SCIENTIFIC FRENCH. Introduction to the vocabulary and styles of work on the mathematical, physical and biological sciences. Required of all four-year pharmacy students. Freshman. 1st term, daily, at 11:15. Assistant Professor Lincoln.

## GERMAN.

Assistant Professor ENGEL.
Assistant Professor CORBIN.

1.—OUTLINE OF GRAMMAR. The first twenty-four lessons of Otis, with composition exercises. Carruth's Reader, about fifty pages. 1st term, daily, at 8, 9, 11:15, and 2:30. Assistant Professor Engel or Assistant Professor Corbin.

2.—CARRUTH'S READER, completed, ZSCHOKKE, KLEIST, HEYSE (100 pp.), and SCHILLER'S WILHELM TELL (complete). Also special exercise on case government and auxiliary verbs (Otis, lessons 25–37), and sight-reading. 2d term, daily, at 8, 9, 11:15, and 2:30. Assistant Professor Engel or Assistant Professor Corbin.

3.—(1) LESSING'S MINNA VON BARNHELM. Geschichte des 30-jährigen Krieges. Outline of German literature in dictations and lectures. Sight-reading. 1st term, daily, at 8, 9, 11:15, and 3:30. Assistant Professor Engel or Assistant Professor Corbin.

## MATHEMATICS.

Associate Professor NEWSON.
Assistant Professor VAN DER VRIES.
Assistant Professor ASHTON.

1.—(*a*) ALGEBRA. Quadratic equations, radicals, exponents, fundamental principles of logarithms, and use of logarithmic tables. Wentworth's College Algebra, revised. 1st half-term.

(*b*) Solid Geometry, Wentworth's Geometry; or Plane Trigonometry, Miller's Trigonometry. 2d half-term. 1st term, at 2:30, Assistant Professor Ashton; 2d term, at 8, Assistant Professor Ashton.

2.—Analytical Geometry. Elements of plane analytics, including the geometry of the conic sections, and an introduction to solid analytics. Tanner and Allen's Analytic Geometry or Ashton's Analytic Geometry. Both terms. 1st term at 8 and 4:30; 2d term at 10:15 or 3:30. Associate Professor Newson, Assistant Professor Van der Vries, and assistant.

## MINERALOGY.

Assistant Professor Kay.

1.—Elementary Mineralogy. An abridgment of course 1, the College, including principally crystallography, blowpipe analysis, and a study of ores. 1st term, (*b*), 1:30 to 3:30. Assistant Professor Kay.

## PHARMACY AND MATERIA MEDICA.

Professor Sayre.
Professor Bailey.
Assistant Professor Havenhill.
Mr. Emerson.

1.—Descriptive Pharmacy. Introduction to the subject of pharmacy; the apparatus and processes used in the preparation of medicines and a systematic study of the classes of official preparations. Lectures and recitations. Junior, 1st term, (*a* and *b*), at 3:30. Assistant Professor Havenhill.

2.—Physical Manipulation. A brief review of the principles of physics relating to pharmacy, including weights, measures, and specific gravity; the construction, methods of standardizing and use of the various instruments employed in testing the strength and purity of the official substances. Lectures, recitations, and laboratory work. Junior, 1st term, (*a*), 4:30. Assistant Professor Havenhill.

3.—Galenical Preparation. Practical work in the manufacture of standard medicinal preparations, as contained in the pharmacopœia and national formulary. Laboratory work. Must be preceded by courses 1 and 2. Junior, 2d term, (*a* and *b*), 10:15 to 12:15. Mr. Emerson.

4.—Inorganic Medicinal Salts. The source, manufacture, physical properties, general and specific characteristics and identity of inorganic substances used in medicine. Lectures, recitations, and

laboratory work. Must be preceded by introductory chemistry. Junior, 2d term, (*b*), at 3:30. Assistant Professor Havenhill.

5.—Theory and Practice of Pharmacy and Pharmaceutical Chemistry. A critical review of the preparations of the U. S. Pharmacopœia; methods of identification; tests for impurities and detection of adulterations occurring in medicinal salts; organic, inorganic and synthetical remedies. Lectures and recitations. Senior, 1st term, (*a* and *b*), at 10:15. Professor Sayre.

6.—Organic Materia Medica and Pharmacology. The classification, physical description, chemical constitution of the crude drugs of the pharmacopœias; their chemical and physiological properties; therapeutic application; methods of prescribing and dispensing; the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. Senior, 2d term, (*a* and *b*), Monday, Tuesday, Wednesday, and Thursday, at 11:15. Professor Sayre.

7.—Toxicology. Lectures on the sources, properties, methods for detection and antidotes for poisons. Must be preceded by introductory chemistry. Senior, 2d term, (*a* and *b*), by appointment. Professor Bailey.

8.—Dispensing. Compounding of prescriptions and a practical study of incompatibilities. Lectures and laboratory work. Senior, 2d term, (*a*), 8 to 10. Professor Sayre.

9.—Thesis. Original research in one of the subjects connected with the pharmaceutical profession. An outline of the work should be presented to the Dean by the middle of the second term. Senior, 2d term, (*b*), 8 to 11:15.

10.—Library Work. Specially designed to familiarize the student with pharmaceutical literature; will include exercises in indexing and reviewing various topics. 2d term, (*b*), hours by appointment. Professor Sayre.

11.—Practical Exercises. These will include the care of the prescription room, stock-taking, etc. Must be preceded by courses 1 and 4, and pharmacognosy. 2d term, (*b*), 8 to 10. Assistant Professor Havenhill.

12. Manufacture of artificial fruit essences and other compound ethers.

13.—Pharmaceutical Jurisprudence. Relating to the laws pertaining to pharmacy in different states, and to the laws pertaining to the mercantile business, together with practical business suggestions. A course of not less than ten lectures, given in connection with the Pharmaceutical Society. Hours by appointment. Associate Professor Higgins.

14.—Pharmacy and Pharmacognosy. A special course designed to meet the needs of medical students, comprising weights, measures and processes used in the preparation of medicines; the geographical distribution, physical properties and identification of crude drugs. Lectures, recitations, and laboratory work. 1st term, (*a*), 1:30 to 3:30. Assistant Professor Havenhill.

## PHYSICS.

Assistant Professor Rice.

1.—Introductory Physics. Recitations and laboratory. 2d term, daily, 10:15 to 12:15. Assistant Professor Rice.

Prerequisites: Algebra and plane geometry.

2.—General Physics. Experimental lectures and recitations. 1st term, daily, at 9. Assistant Professor Rice.

Prerequisites: Physics 1, or equivalent, and plane trigonometry.

3.—Physical Measurements and Methods. A laboratory course, to follow physics 2. 2d term, daily, 1:30 to 3:30. Assistant Professor Rice.

Prerequisites: Physics 2, or equivalent, and plane trigonometry.

## PHYSIOLOGY.

Associate Professor Hyde.

1.—Physiology. A brief course in physiology. Lectures and recitations, with demonstrations, based upon the essential structures and functions of the human body, are supplemented twice a week by practical work in the laboratory. The treatment of emergency cases, observations on the action of drugs upon tissues, the relation of the different organs and bones to each other and the structure of the chief tissues are some of the subjects undertaken by each student. Senior, 1st term, (*a*), 1:30 to 3:30. Associate Professor Hyde.

# VII. The School of Medicine.

## Faculty.

Frank Strong, Ph. D., President.

Clarence E. McClung, Ph. D., Acting Dean. Associate Professor of Zoology.

Edgar H. S. Bailey, Ph. D., Professor of Chemistry.

Lucius E. Sayre, Ph. M., Professor of Pharmacy.

James Naismith, A. B., M. D., Associate Professor and Instructor in Physical Diagnosis.

Marshall A. Barber, A. M., Associate Professor of Bacteriology.

Edward Bartow, Ph. D., Associate Professor of Chemistry.

Ida H. Hyde, Ph. D., Associate Professor of Physiology.

George H. Hoxie, A. M., M. D., Associate Professor of Anatomy.

Hamilton P. Cady, Ph. D., Assistant Professor of Chemistry.

L. D. Havenhill, B. S., Ph. M., Assistant Professor of Pharmacy.

———, Instructor in Histology.

Robert S. Magee, M. D., Lecturer on Pathology.

Eugene Smith, M. D., Demonstrator in Anatomy.

Herbert W. Emerson, B. S , Ph. C., Instructor in Pharmacy.

———, Assistant in Chemistry.

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## The New Medical School of the University of Kansas.

The Board of Regents of the University of Kansas has made provision for the enlarging of the medical course to a full four-year course. The detailed arrangements, however, cannot be made in time to be inserted in the present catalogue. A supplementary medical catalogue will therefore be published about July 1, and will be sent to the address of any one applying for it.

The first two years of the full medical course will still remain at Lawrence. The developments in modern medicine and surgery have

made it vital that the preliminary scientific work of the medical course shall be exhaustive and specialized. For this purpose large and well-equipped laboratories are necessary, such as can be maintained only by universities having large funds at their disposal. Such laboratories, which cost many thousands of dollars each year to maintain, are already in existence at the University, and the preliminary medical work will be done in them. They will be enlarged for the coming year and the facilities of the laboratories greatly increased. It has also been found to be desirable that the preliminary scientific work of the medical course should be done separately from the practical or clinical work.

The last two years of the medical course—that is, the years that deal with the practical application of the principles of medicine and surgery—will be done at Rosedale. The development of modern medicine and surgery determined this also, for a large supply of clinical material is necessary for the handling of the practical work of the medical course. There will be established at Rosedale, also, a laboratory in clinical medicine and surgery, which will be equipped to do the highest kind of research work, and which, it is believed, will lead to real discoveries in medicine.

The standard of entrance to the medical course will be graduation from a four-year high-school course with such conditions as are now allowed for entrance to the College. The work of the medical course will be of the highest possible grade and the standard for entrance will be raised as circumstances allow. It is the intention of the University authorities to make the medical course the highest graded course in this part of the United States. Many of the most eminent men in the medical profession will be associated with the teaching force of the School of Medicine, and it is expected that the best-equipped men in Kansas will assist in the conduct of the work.

Applications for catalogues may be made to the Registrar, or Chancellor, of the University.

## Purposes of the School.

The course in medical studies offered in 1904–'05 by the University of Kansas covered the first two years of the four-year course now required in most of the medical colleges of the United States. None of the strictly professional or clinical branches were given, and no attempt was made to offer these. Of the so-called scientific branches, however, all were given that are usually taught in the best medical colleges of this country during the first two years of the course. The work in these branches was exceptionally thorough and complete, the time devoted to them being seventy-two weeks, as compared with about fifty weeks in the usual medical courses.

### Degrees.

The course in the School of Medicine leads to the degree of doctor of medicine.

### Equipment.

Practically the whole scientific equipment of the University is at the disposal of the students of the School of Medicine.

The greater part of the work is in the laboratory, with recitations and assigned readings, the lectures being supplementary only. For this reason special attention has been given to equipping the laboratories, where the student spends the larger part of his time. The physiological laboratory is supplied with a set of apparatus for the use of each student. In the laboratories of bacteriology, histology, and embryology, each student is provided with a microscope and other apparatus for his exclusive use. In the various courses in chemistry, the equipment is adequate for thorough individual work; while the well-established School of Pharmacy offers exceptional facilities to the student of medicine.

Commodious laboratories for histology, pathology, bacteriology and embryology are afforded in Snow Hall. The old chemistry building is devoted to human anatomy and physiology. Its half-dozen laboratories now afford large facilities for work in physiology and anatomy. All the work in chemistry is done in the Chemistry Building. This arrangement will provide, all together, fifteen separate and large laboratories for the use of the medical students.

## Admission.

There are two methods of admission to the School of Medicine: First, by examination; second, by certificate.

**By Examination.** Students who cannot present certificates from accredited schools will be examined in the subjects required for admission at the times and place of examination, indicated on page 68 of this catalogue, under "The College." Subjects upon which the candidate will be examined are the same as those required for admission to the College.

**By Certificate.** Nearly all students enter the School of Medicine on certificates from high schools, academies, and other preparatory schools. The method of accrediting by certificate is the same as that in "The College," as noted on page 69.

Graduates of state normal schools, or of high schools or academies outside of the state of Kansas, whose credits are accepted by another state university, may be admitted under the same condition.

**Number of Units Required.** The time value of each study is stated in units, a unit meaning one high-school study pursued daily for at least thirty-five weeks. A total of fifteen units is required for entrance. A student may be conditioned in not more than three units.

**Detailed List.** A detailed description of the work required for admission will be found under "The College," page 70, the admission requirements being the same.

### Expenses.

By legislative enactment, a matriculation fee of five dollars (to be paid but once) must be charged each Kansas student entering the School of Medicine. All students are required to pay an incidental fee of twenty-five dollars. Non-residents of Kansas must pay a matriculation fee of ten dollars and an incidental fee of thirty-five dollars. If the student so elects, one-half of the incidental fee may be paid at the beginning of each term.

### Certificates.

To all students who satisfactorily completed the studies of the two-year course a certificate of proficiency was given, showing the amount and character of the work. This certificate was accepted in most of the colleges of the United States as satisfactory evidence of the completed work of the first two years of a four-year course, admitting the student to the third year, providing the student had completed the first two years of a collegiate course in addition. This school rigidly complied with the requirements of the regents of the University of the State of New York for the accredited schools of the second class. No certificate of credits was given except for work done in regular course in the School of Medicine, and no advanced standing was given except to students from reputable colleges of medicine.

# Courses of Study.

NOTE.—These courses are to be revised for the work in the new Medical School. This matter is copied from the Catalogue of 1903–'04.

There are, therefore, two courses of study offered to students intending to become physicians:

1. A two-year course, at the completion of which a certificate of proficiency is given admitting the student into other medical schools.
2. A four-year course, leading to the degree of bachelor of arts in medicine.

Wherever it is possible, the student is earnestly advised to pursue the longer course, one which will give him that preparation in the natural sciences and modern languages now almost indispensable to the practitioner of medicine. This course, by combining the work of the first two years of the medical curriculum with his Freshman and Sophomore studies, will enable the student to acquire both the B. A. and M. D. degrees in six years. It is the intention of the University, as soon as possible, to require of all students such preparation. Meanwhile, the shorter course of two years is offered for those unable to take the longer one.

## Two-year Course.

FIRST YEAR.

*First Term:*

Anatomy (Anatomy 1), 1st two fifths of term, daily, at 11:15. Associate Professor Hoxie and assistant.

Myology (Anatomy 1), last three-fifths of term, at 11:15. Associate Professor Hoxie.

Osteology (Anatomy 2), (*a*), daily, at 8. Doctor Smith.

Chemistry (Chemistry 1), 1:30 to 3:30, daily. Associate Professor Bartow and assistant.

Histology (Zoology 1), 3:30 to 5:30, daily. Mr. Baumgartner.

*Second Term:*

Anatomy (Anatomy 4, 6), 8 to 12:15, daily. Associate Professor Hoxie and Doctor Smith.

Bacteriology (Botany 1), 1:30 to 3:30, daily. Associate Professor Barber.

Chemistry (Medical Chemistry 3), 3:30 to 5:30, daily, Assistant Professor Cady; or (Medical Chemistry 2), 3:30 to 5:30, daily. Associate Professor Bartow and assistant.

SECOND YEAR.

*First Term:*

Anatomy (Anatomy 5), 8 to 12:15, (*a*), daily. Associate Professor Hoxie.

Regional Anatomy and Physical Diagnosis (Anatomy 8 and 9), 1:30 to 3:30, (*a*), daily. Associate Professor Naismith.

Physiology (Physiology 1), 8 to 12:15, (*b*), daily. Associate Professor Hyde.

Pharmacy and Pharmacognosy (Pharmacy 1), 1:30 to 3:30, (*b*), daily. Assistant Professor Havenhill.

Physiological Chemistry (Pharmacy 3), 3:30 to 5:30, daily. Professor Sayre and Mr. Emerson.

*Second Term:*

Physiology (Physiology 1), 8 to 11:15, daily. Associate Professor Hyde.

Materia Medica (Pharmacy 2), 11:15 to 12:15, except Friday. Professor Sayre.

Toxicology (Chemistry 4), 11:15 to 12:15, Friday. Professor Bailey.

Pathology (Zoology 3), 1:30 to 3:30, daily. Doctor Magee and Mr. Baumgartner.

Embryology (Zoology 2), 3:30 to 5:30, (*b*), daily. Associate Professor McClung.

## Four-year Course.

For entrance requirements, see admission to the College, page 68.

Wherever is is possible, the student is advised to take the work for the B. A. degree in medicine, and for such the following course is recommended. (The courses named may be found under the College courses of instruction.)

FRESHMAN YEAR.

*First Term:*

French or German, Rhetoric 1, Mathematics 1, Hygiene, Physical Education.

*Second Term:*

French or German, Botany 1 or Zoology 3 or Physics 1, Chemistry 1, Physical Education.

SOPHOMORE YEAR.

*First Term:*

French or German, Zoology 1 or Botany 2 or Physics 2, Chemistry 2, Physical Education.

*Second Term:*

French or German or Greek, Botany 1 or Zoology 3 or Physics, Chemistry 3.

JUNIOR YEAR.

*First Term:*

Psychology 1, Anatomy 1 and 2, Histology (Zoology 5), Forensics.

*Second Term:*

Anatomy 4, 6, Chemistry 12, Zoology 6.

SENIOR YEAR.

*First Term:*

Anatomy 5, Physiology 1, Physiological Chemistry.

*Second Term:*

Physiology 1, Bacteriology, Embryology (Zoology 7).

Those entering with acceptable botany, zoology or chemistry should take the advanced course in the Freshman and Sophomore years, but it is recommended that not more than one term's work be had in each of the subjects, in addition to botany and chemistry. Physics must not be omitted. Those who enter with neither German nor French should pursue one or the other of these languages, preferably the former, during the whole, or the most, of the Freshman and Sophomore years; those who enter with preparation in either of these languages should seek to become as proficient as possible in both.

**Degree of Bachelor of Arts in Medicine.**

Any student who has completed the work of the Sophomore year in the College, or of any other university or college doing equivalent work, will be given the degree of bachelor of arts in medicine upon the completion of the course in the Junior and Senior years of the subjoined curriculum, and enough additional work to make twenty-four terms. The student is permitted to apply towards this degree all the work of the two-year course except materia medica, pharmacology, and pathology—that is, ten terms' work in all.

# Courses of Instruction.

These courses were offered in 1904–'05. A revision is necessary for 1905–'06.

## ANATOMY.

Associate Professor Hoxie.
Associate Professor Naismith.
Doctor Smith.

### EQUIPMENT.

The department occupies the entire lower floor of Medical Hall. The dissecting rooms will accommodate 100 students, are well lighted by windows and electricity, and are provided with steam heat and cement floors. They are, therefore, thoroughly washable. Besides the dissecting-rooms, the department has a study-room, two storerooms, and an office. The material for study is preserved in formalin-glycerine solutions, and is of natural consistency, and odorless. The department is constantly adding to its supply of models and reference-books, so that the student is never at a loss because of a lack of such helps.

### ADVICE AS TO CHOICE OF COURSES.

Medical students will, of course, take all the required courses, and in the order given. The plan is to provide the student with a general theoretical knowledge of the body and a detailed knowledge of the bones before he begins dissecting. The latter begins at the second quarter, and thenceforward the theoretical and practical studies go on simultaneously. It is recommended that students intending to take up anatomy obtain some knowledge of Latin and Greek word structure, as well as a reading knowledge of at least German, before beginning the study.

1.—General Anatomy. A series of lectures introductory to the medical course as well as to the study of anatomy. It considers briefly the history of medicine, the relation of the medical sciences, and then the development and structure of the body. Daily, at 11:15, from the beginning of the first term. Required, two-fifths term. Associate Professor Hoxie.

2.—Osteology. A study of the bones and joints by recitation and drawing. Daily, 1st year, 1st term, 1st half, at 8. Each student is provided with at least a lateral half of a disarticulated skeleton for home study. Cunningham's text-book of Anatomy is used for the recitations. Required, one-half term. Doctor Smith.

3.—Myology. A daily recitation on the muscles, at 11:15, following course 1. This course is intended to gather up into a systematic arrangement the work of dissection at this period. Text-book, Cunningham. Three-fifths term required. Associate Professor Hoxie.

4.—Angiology and Organology. A text-book study of the vascular systems and the organs of the body. Daily, at 11:15. Required of first-year medical students. Text-book, Cunningham. One term. Associate Professor Hoxie.

5.—Neurology. A laboratory and text-book study of the nervous system and special senses. Daily, from 8 to 12:15, 1st half of the 1st term. Required of second-year medical students. Credit, one term. Associate Professor Hoxie.

6.—Dissection. Daily, from 8 to 12:15. The body is divided into four parts: head, trunk, arm, and leg; and each student is required to dissect one lateral half. The cost of the material for this work is usually $2.50 a part; hence, where two students work together the total cost of material will be five dollars. Upon the completion of one part, the student may not undertake another till he has passed a satisfactory examination of the work already done. Required of all medical students. Credit, two terms. Associate Professor Hoxie and Doctor Smith.

7.—Topographical Studies. The relation of anatomical structures as revealed by the study of serial cross-sections. Each part may be studied by itself, but only after the student has dissected that part. Elective and by appointment. Credit for each part, when dissected and drawn, one-half term. Associate Professor Hoxie.

8.—Topographical Anatomy. Topography of the cranium, the thorax, and the abdomen, illustrated on the living model and verified on the cadaver. Daily, at 1:30, for three weeks, 1st term, ($\alpha$). Associate Professor Naismith.

9.—Physical Diagnosis. Principles and methods of physical diagnosis; practice in inspection, palpation, percussion and auscultation of the normal body, so that the conditions and sounds in health may be familiar to the student; abnormal cases will be introduced for comparison. The class will work in sections in the examining room. The methods used will be similar to those used in life insurance and army examinations. Daily, at 1:30, for six weeks, 1st term, ($\alpha$). Associate Professor Naismith.

## BOTANY.

Associate Professor BARBER.

1.—BACTERIOLOGY. Bacteriological technique. Pathogenic bacteria and other forms of economic importance. Laboratory work ten hours a week, reading, and lectures. 2d term, daily, 1:30 to 3:30. Professor Barber. This is course 8, the College.

## CHEMISTRY.

Professor BAILEY.
Associate Professor BARTOW.
Assistant Professor CADY.

For equipment, see page 40.

1.—GENERAL CHEMISTRY. Laboratory work three afternoons each week, and lectures two afternoons, from 1 to 3. In this course special attention is given to the development of the laws that underlie the theories of chemistry, and those theories are illustrated by a study of the similar elements. This is followed by a study of the combination of the elements. The course with the non-metallic elements is followed by a careful study of the metals, including their source, methods of preparation, properties, uses, and the uses of the compounds in the arts and in medicine. The study of methods for writing reactions and of chemical problems is carried on in connection with the daily lectures and recitations. In the laboratory work, the student first learns the simpler problems of chemical manipulation, then the practical methods of preparing the ordinary elements, and afterwards of the acids, ammonia, etc. Frequent recitations are held, in order to show the proficiency of the student, and a final examination determines his knowledge of the whole subject. Textbook, Remsen's Chemistry. 1st term, daily, 1:30 to 3:30. Associate Professor Bartow and assistant.

2.—ORGANIC CHEMISTRY. (Same as course 12, the College.) Lectures and recitations three times per week. The course in organic chemistry is a continuation of the course in general chemistry. The lectures will treat of the occurrence, methods of preparing and the properties of the various classes of organic compounds; as, the hydrocarbons, alcohols, ethers, aldehydes, sugars, starches, etc. 2d term, daily, 3:30 to 5:30. Associate Professor Bartow and assistant.

3.—QUALITATIVE ANALYSIS. This course covers the general methods for the detection and separation of the metals and acids. This is largely carried on by laboratory work, with occasional lectures on the theory. Two exercises per week, throughout the second term. term. 2d term, daily, 3:30 to 5:30. Assistant Professor Cady.

4.—Toxicology. A discussion of the source, properties, methods of detection, *post-mortem* appearances, fatal dose and methods of treatment in case of the inorganic and organic poisons. Lectures, with examinations. One exercise per week, throughout the second term. Professor Bailey.

## PHARMACY.

Professor Sayre.
Assistant Professor Havenhill.
Mr. Emerson.

For equipment, see page 40.

1.—Pharmacy and Pharmacognosy. A special course designed to meet the needs of medical students, comprising weights, measures and processes used in the preparation of medicine; the geographical distribution, physical properties and identification of crude drugs. Lectures, recitations, and laboratory work. 1st term, (*b*), 1:30 to 3:30. Assistant Professor Havenhill.

2.—Pharmacology. The chemical and physiological properties of drugs, therapeutical application, methods of prescribing and dispensing, the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. 2d term, Monday, Tuesday, Wednesday, and Thursday, at 11:15. Professor Sayre.

3.—Physiological and Medical Chemistry. This course is offered to meet the requirements of medical students. Products of physiological interest are separated from animal tissues and organs and studied in detail. Special attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second part of the course consists of five weeks of urinalysis, embracing lectures, recitations, and work in both chemical and microscopical laboratories. 1st term, four days a week, 3:30 to 5:30. Professor Sayre and Mr. Emerson.

## PHYSIOLOGY.

Associate Professor Hyde.

### EQUIPMENT.

The physiological department is thoroughly equipped with approved modern apparatus for demonstration and experimental work.

Besides a large lecture-room that seats 100 students, it possesses a department library for the use of the students. The library contains the latest reference books and all of the best physiological journals.

The medical laboratory is equipped with specially planned tables, that have gas, water and electrical connections. Each table is supplied with a complete outfit of the best modern apparatus, sufficient for the investigation of hundreds of experiments, and two students are assigned to each table. It also has a large laboratory for the Pharmacy and Liberal Arts students, that contains tables particularly designed for their work. In this laboratory are, besides the needed instruments, digesters, spirometers, kymographs, manometers, and all kinds of electrical apparatus, a skeleton, and a finest French manikin.

The research room is fitted up with necessary tables, instruments and electrical apparatus for any kind of physiological experiments. There is also a large preparation room, where most of the material is prepared, and a store-room.

1.—Physiology. Recitations and lectures, with demonstrations, conferences, and journal club, and laboratory experimental work. Foster's Text-book of Physiology. Required of second-year medical students. Daily throughout the year, 8 to 11:15. Associate Professor Hyde.

2.—Physiology. Graduate course. Experimental physiology and original research. Open to students who have taken not less than a year of anatomy and physiology and have given evidence that they are prepared for it. Either or both terms, by appointment. Associate Professor Hyde.

## ZOOLOGY.

Associate Professor McClung.
Doctor Magee.
Mr. Baumgartner.

For equipment, see page 39.

1.—Histology, or Microscopical Anatomy. Microscopical manipulation, the study of normal tissues and the methods of preparing mounted objects are presented in this course. Lectures and laboratory work. Required of first-year medical students. 1st term, daily, 3:30 to 5:30. Mr. Baumgartner.

2.—Embryology. The general principles of ontogenetic development, with special application to man. Lectures, text-book work, and laboratory exercises. Required of second-year medical students. 2d term, (*b*), daily, 3:30 to 5:30. Associate Professor McClung.

3.—Pathology. A course principally in pathological histology. Required of second-year medical students. 2d term, daily, 1:30 to 3:30. Doctor Magee and Mr. Baumgartner.

# VIII.—The Summer Session.

## Faculty.

Frank Strong, Ph. D., Chancellor, and President of Faculty.

William H. Carruth, Ph. D., Director of the Summer Session. Professor of Germanic Languages and Literatures.

Ephraim Miller, Ph. D., Professor of Mathematics and Astronomy.

James W. Green, A. M., Professor of Law.

Frank O. Marvin, A. M., Professor of Civil Engineering.

Edgar H. S. Bailey, Ph. D., Professor of Chemistry and Metallurgy, and Director of Chemical Laboratories.

Alexander M. Wilcox, Ph. D., Professor of Greek Language and Literature.

Lucius E. Sayre, Ph. M., Professor of Pharmacy.

Frank W. Blackmar, Ph. D., Professor of Sociology and Economics.

Lewis L. Dyche, A. M., M. S., Professor of Systematic Zoology, and Taxidermist.

Charles G. Dunlap, Litt. D., Professor of English Literature.

Carl A. Preyer, Professor of Piano, Counterpoint, Canon, and Fugue.

Olin Templin, A. M., M. S., Professor of Philosophy.

Edwin M. Hopkins, Ph. D., Professor of Rhetoric and English Language.

Erasmus Haworth, Ph. D., Professor of Physical Geology, Mineralogy, and Mining.

William C. Stevens, M. S., Professor of Botany.

Arvin S. Olin, A. M., Professor of Education.

William A. Griffith, Professor of Drawing and Painting.

Eugenie Galloo, A. M., Professor of Romance Languages and Literatures.

Charles E. Hubach, Professor of Voice.

John E. Boodin, A. M., Professor of Philosophy.

Henry B. Newson, Ph. D., Associate Professor of Mathematics.

James Naismith, M. D., Associate Professor of Physical Training, and Chapel Director.

Edward Bartow, Ph. D., Associate Professor of Chemistry.

Ida H. Hyde, Ph. D., Associate Professor of Physiology.

Miles W. Sterling, A. M., Associate Professor of Greek.

Raphael D. O'Leary, A. B., Associate Professor of English.

William E. Higgins, B. S., LL. B., Associate Professor of Law.

Clarence E. McClung, Ph. D., Associate Professor of Zoology.

Hannah Oliver, A. M., Assistant Professor of Latin.

Martin E. Rice, M. S., Assistant Professor of Physics and Electrical Engineering.

Elmer F. Engel, A. M., Assistant Professor of German.

Archibald Hogg, A. B., Assistant Professor of Philosophy.

Hamilton P. Cady, Ph. D., Assistant Professor of Chemistry.

Ralph W. Cone, A. M., Assistant Professor of Sociology and Economics.

George L. Lincoln, A. M., Assistant Professor of French.

Margaret Lynn, A. M., Assistant Professor of English.

Edgar G. Frazier, Ph. B., Assistant Professor of Public Speaking and Debate.

Carl L. Becker. B. L., Assistant Professor of European History.

Ralph E. Bassett, A. M., Assistant Professor of Romance Languages.

Arthur J. Boynton, A. M., Assistant Professor of Sociology and Economics.

David F. McFarland, A. M., Assistant Professor of Chemistry.

Adam F. Hendrix, A. M., Instructor in Latin.

Frank E. Jones, Instructor in Carpentry.

Harriet Greissinger, Mus. B., Instructor in Piano.

## Purposes of the Summer Session.

In accordance with a general desire to increase the usefulness of the University and bring its resources nearer to the people of the state, the Summer School was established to meet the demands of the following classes:

1. Instructors in other colleges who may wish the opportunity of further study and of observing the work in their subject as pursued at the University of Kansas.

2. City and county superintendents, principals, and teachers, especially those having work of high-school grade, to enable such to review their work, to become familiar with the latest and best methods, and thus prepare to do their own work better.

3. Students preparing to enter the University, to enable such to complete their preparation.

4. University students, whether already matriculated or coming for the first time into membership in the University, to enable such to correct irregularities in their standing or to attain standing in the University.

5. Graduate students, especially such as have already completed a portion of their work for the second degree and are prevented by regular employment from attending University during the other sessions.

6. Intelligent people in all walks of life who wish to enlarge their intellectual horizon, to renew or review college studies of earlier years, to get into touch with current scholarship, and who may be inclined to spend a vacation from the regular tasks of life at this pleasant seat of learning.

### A Cool Place for Summer Work.

The chief objection that has been urged against the Summer Session is the claim that the climate of Kansas in summer is too oppressive for intense mental exertion. But a comparison of conditions with those in neighboring states leads to the conclusion that the heat of Kansas is no more trying than that of Indiana or Missouri, or even of Chicago. Moreover, there is no cooler place in all Kansas in summer than the breezy heights of Mount Oread. The heavy walls of the buildings, the plentiful shade of the campus and the perpetual breeze make this the most suitable place in the state for intellectual work during the summer. Furthermore, it is noted that the teachers of Kansas have for years and by thousands endured the heat and the pressure of summer institutes, and the Summer Session at the

University will be a moderate trial in comparison. The earlier morning hours and those of the late afternoon are preferred for regular exercises. As the Summer Session lasts only six weeks, there is no reason to fear that the work will exhaust either instructors or students. Precautions are taken to prevent enthusiastic students from undertaking too much work. The University is supplied with distilled water, and the city supply has often been analyzed and found germ-free.

For description of buildings and grounds, see pages 38–41.

### Nature of Courses.

To meet the demands of the various classes of students, the courses given are of two kinds—those taken for entrance or advanced credit, and those for which no college credit toward a degree is expected.

#### COURSES NOT LEADING TO A DEGREE.

Courses of this kind are offered to any who are qualified to profit by them, without regard to regular university standing. Record will be kept of work and attendance in such courses, and a certificate of such attendance given, if desired. Students will not enroll in more than four such popular courses, as a maximum, though they may attend as visitors whatever courses they may desire. The popular courses will meet at least one hour daily. The high-school teachers of the state are especially invited to take advantage of these courses to refresh their knowledge of such subjects as demand it, and especially to bring themselves into touch with the University and the needs of their pupils who may be preparing to enter the University.

All persons enrolled in the Summer Session for work not leading to a degree are welcome to attend whatever exercises and lectures they desire, but if they attend any course regularly it is expected that they enroll as regular members of the class.

#### COURSES FOR REGULAR UNIVERSITY CREDIT.

For the present most courses to be credited toward a university degree will be duplicates of those given during the regular sessions, although some courses not usually divided offer half-term credits. No work of the Summer School will be accepted toward a degree which does not equal in quantity and quality the work of the regular sessions. To this end the following regulations are observed:

For students already matriculated in the University, the same rules regarding maturity and qualification for taking a course apply as in other sessions. Students who enroll for credit toward a degree must be regularly matriculated. Special students must satisfy the instructor of their fitness to pursue the courses given by him. Lec-

ture and recitation courses for full credit meet two hours daily, five days a week, for six weeks, each recitation hour requiring three hours of study or library work. A half-course of this kind meets one hour daily, and requires three hours of study or library work daily. Laboratory courses require five hours daily for the six weeks; shop work and drawing equal, hour for hour, the work of the regular sessions; but laboratory hours will not exceed thirty per week. One full course (equivalent to five hours per week for a regular term of eighteen weeks) is the maximum credit that can be attained in one Summer Session; but engineers may do in addition one course in shop or drawing. Students desiring a full-course credit toward a degree may not enroll in any other course, and will not be encouraged to attend other courses, as the completion of one full-credit course in the short session demands all of the student's time not properly due to rest and recreation.

## Terms of Admission.

The requirements for admission are the same for the Summer Session as for the other sessions of the University. Graduates of the University of Kansas or other colleges and universities of good standing are admitted to graduate courses without examination. Undergraduate students are admitted as follows:

1. By passing the examinations for entrance to any regular course of the University, as described in this catalogue. The entrance examinations to the University this year fall June 1, 2, and 3, or they may be taken at the opening of the Summer Session.

2. By certified transcript of record from an accredited school. The list of such schools will be found on page 89.

3. By certified standing or diploma of graduation from a state normal school.

4. By presentation of evidence of satisfactory scholarship and character from a college or university at which the candidate has been in attendance.

Persons twenty-one years of age who are not candidates for a degree and wish to take special studies are permitted to enter as special students upon giving satisfactory evidence that they are prepared to profit by the courses desired.

For the Summer Session permission to take particular courses is also extended to teachers who satisfy the professors in charge that they are able to take the courses to advantage.

Students will be admitted to the elementary courses of the Summer Session without special examination. They will also be admitted

to University courses for which they are qualified, but University credit will be recorded only for students who have regularly matriculated in the University.

Blank certificates of admission will be sent on application to the Registrar.

(Advanced, *i. e.*, college, credit will be given for work done in high schools upon examination only.)

### Expenses for the Summer Session.

The fee for Kansas students for the Summer Session will be ten dollars; for non-residents, fifteen dollars, which will cover admission to all courses excepting those in fine arts. For certain laboratory courses there will be, in addition, the cost of materials.

Lawrence is well provided with boarding-houses and restaurants, and a sufficient number of these will continue in operation to supply all demands of the Summer Session. Good board, including room and service, may be had in private families at from $3 to $4.50 per week. If the students choose to organize themselves into a club, the expense of living may be much reduced. The stewards of some of the existing student boarding clubs will remain on the ground and be prepared to carry on their organizations. There is a lunch-room within 500 feet of the main building, so that those who wish can avoid going down the hill in the middle of the day.

A list of rooms and boarding-places is already prepared, and students can obtain information from the Registrar and engage rooms in advance if they so desire. For further information regarding courses and conditions, address Chancellor Frank Strong, Lawrence, Kan.

### Degrees Granted.

The degrees and certificates given by the University through its various schools are shown below. Statements concerning the requirements for these degrees will be found under each school.

Graduate School: Doctor of Philosophy, Master of Arts, Master of Science, Civil Engineer, Electrical Engineer.

The College: Bachelor of Arts, Teacher's Diploma, Bachelor of Arts in Medicine, Bachelor of Arts in Law.

School of Engineering: Bachelor of Science.

School of Law: Bachelor of Laws.

School of Fine Arts: Bachelor of Music, Bachelor of Painting, teacher's certificate at completion of two-year course.

School of Pharmacy: Bachelor of Science, Pharmaceutical Chemist.

School of Medicine: Bachelor of Science in Medicine, Bachelor of Arts in Medicine, certificate of completion of the course.

### Teacher's Diploma.

The teacher's diploma of the University may be given to A. B., A. M. and Ph. D. graduates of the University on the following conditions:

1. *Special Knowledge.*—The completion of at least twenty hours of college work in the subject that the candidate proposes to teach, or in closely allied subjects; the ultimate decision as to the candidate's proficiency to rest with the head of the department in which the major work is taken.

2. *Professional Knowledge.*—The completion of twelve and one-half hours' work in the department of education.

3. *Amount of Work Offered.*—The candidate for the A. B. degree, who is at the same time a candidate for the teacher's diploma, shall be required to offer five hours' additional undergraduate work.

4. *Grade of Scholarship.*—The teacher's diploma shall be granted only to graduates whose scholarship in the undergraduate work averages as high as grade II.

On presentation of the University teacher's diploma, the State Board of Education will issue a three-year state teacher's certificate. At the expiration of the three-year certificate, a life certificate will be issued, if the candidate has taught successfully during two of the three years.

### Recommendation of Teachers.

The University endeavors to assist those of its graduates who desire to teach in securing positions, and at the same time to be of service to high schools, academies and colleges which may be in need of competent instructors. To this end a committee of the Faculty preserves a complete list and record of graduates who are engaged in teaching or have fitted themselves especially for such work. The University authorities are thus prepared at any time to recommend persons who are well qualified for any position that may be made vacant. In so doing, great care is exercised, the special qualifications of various teachers for the particular position in hand being in every case fully considered.

### Recitals.

Organ and piano recitals and other musical entertainments will be given during the Summer Session, to which all students in attendance are invited without charge.

**Equipment for the Summer Session.**

The Summer Session will command the entire equipment of the library of 48,500 volumes, and the laboratories of the University.

The work in botany, entomology, zoology and geology is supported by the cabinet collections, which contain upwards of 250,000 specimens, and by ample laboratories.

Physics, chemistry and pharmacy are taught in separate and well-furnished buildings, with commodious laboratories for special research as well as for classroom work, and supplied with much valuable modern apparatus.

The Greek and Latin departments have at their command a large number of casts, photographs, plates and stereopticon slides of ancient views, portraits, buildings, statues, paintings, vases, and manuscripts.

The departments of history and modern languages are provided with wall maps and charts, and a considerable collection of photographs. All the departments use the stereopticon for illustrating lectures.

The department of mathematics has a large collection of mathematical models of the best German make.

The University library is open every day of the year, excepting Sundays and legal holidays. Library hours are eight A. M. to six P. M.; Saturdays, eight A. M. to twelve M. The reading-room is open from seven P. M. to ten P. M. when the University is in session. Liberal facilities for using the library are offered to all members of the University. All books, except reference books and books too rare to be easily replaced, may be taken from the library for three weeks.

For an extended description of the library and other University institutions, see page 38 *et seq.*

GYMNASIUM AND OUT-OF-DOOR SPORTS.

The University gymnasium, with lockers and bath-rooms, will be open during the Summer Session for the use of the students. Doctor Naismith, director of physical training, will conduct courses in physical training with reference to public-school needs, and will also direct outdoor sport. The Kansas river affords a fine boating course, the golf links adjoin the campus, tennis courts are available, and McCook Field will furnish excellent grounds for baseball and track events. Lawrence has several miles of brick paving, furnishing ample wheeling courses. In fact, the Summer Session offers in many ways the advantages of a summer outing to teachers in the cities.

## Religious Aids.

**Chapel.**—Religious exercises are held in the University chapel from 10:00 to 10:15, and on Friday morning from 10:00 to 10:30. Though attendance at chapel is not required of students, all are cordially invited, and the services are made as attractive and profitable as possible. They consist of Scripture reading, hymns, prayer, and brief addresses by the Chancellor and others.

**Young Men's Christian Association.**—The Young Men's Christian Association is an organization composed of 300 Christian men of the University, banded together for the purpose of preserving and advancing the spiritual interests of the institution.

**Young Women's Christian Association.**—The Young Women's Christian Association is an organization composed of 225 Christian women of the University, united for the attainment of the most perfect development of Christian character among the young women of the institution.

The Summer Session Christian Association is composed of both men and women, students and instructors, and fills essentially the same field as the separate associations during the rest of the year.

**Bible Chair.**—The Woman's Board of Missions of the Christian Church has recently established a chair of Bible instruction at Lawrence for the benefit of the University students, and has purchased a site on Mount Oread, near the University campus, for the erection of a Bible hall. Although maintained in close proximity to the University, the chair is in no way connected with the institution.

## List of Courses.

The proffer of the courses which follow is tentative. *The University reserves the right to withdraw any course for which there are less than six applicants.* It will be noted that in several departments courses are marked as alternatives. This means that only one of them can be given, to be determined by the demand. Accordingly, it is very important to all concerned that students contemplating attendance should give early notice of their intention and of their preference in courses. To this end, they are requested to fill out and mail, as nearly as possible, the blank appended to this bulletin.

Any course offered in this catalogue will be given in the Summer Session, if six or more students wish to enter for it. But the courses offered below seem to be most in demand.

### BOTANY.

1.—Elementary Structural Botany. An introduction to the structure, physiology, ecology and relationships of plants. Particularly recommended to high-school teachers who want to broaden their outlook over the method and scope of a first-year course in botany. Laboratory work, reading, and conferences. Professor Stevens.

2.—Plant Histology. A study of plant tissues, with special reference to their development functions; plant products, their origin and physiological and biological significance. Laboratory work, including physiological demonstrations; reading and discussions. High-school teachers who are already well grounded in course 1 are recommended to take course 2, in which they will gain a more intimate knowledge of how plants are equipped to get their living and meet their environment, and learn the elements of microtechnic, so that they can enrich the high-school course with successful demonstrations with the compound microscope. Professor Stevens.

4.—Plant Physiology. Elementary experimental course, including reading and reports on assigned topics. Students who are ready for advanced work in plant physiolygy will be given subjects for research. Professor Stevens.

### CHEMISTRY.

The following courses are offered, subject to the general regulations that govern other courses. Should there be sufficient demand for several courses, arrangements will be made so that students can

take the work. In the laboratory courses no deposit will be required, but students will be loaned the necessary apparatus, and required to pay for apparatus and chemicals actually broken, destroyed, or used up.

1.—Introductory Chemistry. A study of the chemical elements and their compounds, based on Remsen's Briefer Course in Chemistry. Lectures and laboratory work, arranged in such proportions as shall be best suited to the advancement of the student. From two to five hours daily. Professor Bailey and assistant. Full-term credit. Any student whose previous general training is sufficient may be admitted to this course, and may receive credit tor the same. This course without laboratory work may also be taken by teachers and others who desire simply to review the subject. In this case no examinations will be required and no credit will be given. Or,

2.—Advanced Inorganic Chemistry. This course, consisting of lectures, recitations, and laboratory work, is based on Ostwald's Principles of Inorganic Chemistry. It must be preceded by course 1, or a similar course in general chemistry. It may be taken for credit in the College or Engineering School. Assistant Professor Cady.

3.—Qualitative Analysis. Lectures and laboratory work. Bailey and Cady's Guide to the Study of Qualitative Analysis. Not less than five hours per day. Assistant Professor McFarland. This must be preceded by a course in general chemistry. This course may be taken for credit in the College or Engineering School of the University, provided the student has already received credit for chemistry 2; otherwise the credit will be withheld till that course is completed. Pharmacy and medical students will receive credit for the course. Or,

12.—Organic Chemistry. A study of the hydrocarbons and their derivatives. Lectures, recitations, and laboratory work. This course must also be preceded by course 1. It may be taken for credit in the College, Engineering, Pharmacy or Medical School. Associate Professor Bartow. Those who are prepared for it may take chemistry 13. Or,

5.—Chemistry of Foods. This is a practical course of lectures. and is especially suited to those who have such a knowledge of the subject as is covered by course 1, and who desire to extend their study in the line of the practical applications of the subject to common life. It covers such topics as the chemistry of air, water, fuels, ventilation, the composition of foods, preservation and cooking of foods, digestion, economy of food, dietaries, etc. Teachers and

others who desire may take this course for credit, or without examinations at the close, without credit. Professor Bailey. Or,

7*a*.—Physiological Chemistry. A brief course adapted to the needs of the pharmacist, including the study of the carbohydrates, proteins, normal and abnormal products of animal life. Analysis of various secretions, urinalysis, etc. Laboratory work and lectures. May be preceded by course 1. For credit in the School of Pharmacy only. Professor Sayre.

7*b*. Quantitative Analysis. This course should be preceded by course 3, and may be taken for credit in the Collge or Engineering School. Associate Professor Bartow.

The chemical laboratories offer facilities for research work in analytical, physical and organic chemistry to graduates of this or other institutions who are prepared to do such work. The courses will be accepted for credit in the Graduate School.

## FREE-HAND DRAWING.

5.—The course in free-hand drawing will consist of drawing in charcoal from the cast, elementary perspective, through shadows and reflections, and the principles of pictorial composition.

The method of instruction aims to teach the student to construct form in a simple and correct manner, with special attention given to methods of instruction for those who desire to teach drawing in the public schools, and methods of making drawings for reproduction for those wishing to use them in their scientific work.

The drawing classes will run throughout the term, daily, from 9 to 12, and 1 to 4.

The lectures on perspective will be given Monday, Wednesday, and Friday, 4 to 5, with examples given for outside work.

The lectures on composition will be given on Tuesday and Thursday, 4 to 5, with exercises for outside work. Professor Griffith.

For the entire course a full-term credit will be given in the College. The perspective and composition lectures may be taken as a popular course, without credit.

## EDUCATION.

2.—Philosophy of Education. Library work, based on Rosenkranz and Compayré. Required reading, reviews, and special studies. One hour daily. Professor Olin. Half-term credit.

7.—Comparative Study of Educational Systems. A study of the elements of the school systems of England, France, and Germany, and a comparison with the system of this country. Required

reading, special studies, and reports. One hour daily. Professor Olin. Half-term credit.

These courses are open to Juniors, Seniors, and Graduates. For graduate credit, attendance on the weekly conference in education is required.

## ENGINEERING.

1.—Shop Work. If there should prove to be a sufficient demand, the Fowler Shops will be kept open during the Summer Session, and credit given for time as it may be made. Students desiring this opportunity must make their announcement early.

2.—Shop II. *Carpentry, Turning, and Pattern-making.* This course will be varied to suit the individual needs of the student. Special attention will be given to teachers of manual training or those who are preparing to teach manual training.

For teachers: Carpentry.—Exercises in sawing, planing, joining and structural work of all kinds from drawings. Turning.—The lathe and its tools; practical and ornamental turning. Elementary exercises in wood-carving; selection and care of carving tools. Afternoons, twenty hours per week.

For engineers: In addition to the exercises in carpentry and turning, a practical course in pattern-making, accompanied by talks on pattern work in its relation to molding and practice; the making of special and difficult patterns, cores, and core boxes; the practical construction of patterns to prevent distortion by warping or shrinkage; the technical appliances and usages in modern pattern work. Mornings or afternoons, twenty hours per week.

## ENGLISH LITERATURE.

1.—English Literature: a General Study. Class study of representative authors and collateral reading. Texts used: Simonds's English Literature and Pancoast's Standard English Poems. Open to students who are prepared according to the University entrance requirements in English. Two hours daily. Full-term credit. Assistant Professor Lynn.

2.—American Literature. General history, with especial reference to beginnings and to the work of the best-known writers. Lecture and library course, with class study of representative selections. Two hours daily. Full-term credit. Professor Hopkins.

5.—Shakspere. Lectures upon the life and times of Shakspere, and upon various aspects of Shakspere scholarship. Study and interpretation of three plays, with special attention to literary form, plot, construction, character study, and Elizabethan grammar.

Preparation of two theses. Daily, at 8. Full-term credit. Associate Professor O'Leary.

7.—English Literature of the Nineteenth Century. Prose, exclusive of the novel. Biographical and critical lectures. The essay. Criticism. History. The authors studied are Lamb, Hazlitt, De Quincey, Landor, Newman, Arnold, Carlyle, Macaulay, Ruskin, Pater, and Stevenson. Four hours of library work daily, and preparation of two theses. Daily, at 8. Full-term credit. Professor Dunlap. Or,

10.—The English Novel. An historical and critical survey of the English novel, from Defoe to Meredith. Lectures on the growth and development of the novel. Study of selected typical novels illustrative of important phases of fiction. Four hours of library work daily, and preparation of two theses. Daily, at 8. Professor Dunlap.

Note.—Courses 7 and 10 in English literature are mutually exclusive, but if one of them is given the other may be made a one-hour popular course.

## RHETORIC AND ENGLISH LANGUAGE.

1.—Rhetoric and English Composition. Two hours daily, with exercises and themes. Full-term credit. Assistant Professor Lynn.

3.—Narration and Description. Study of general principles, with exercises. One hour daily. Half-term credit. Assistant Professor Lynn.

6.—Elementary Old English and Middle English. One hour daily. Half-term credit. Professor Hopkins.

8.—English Language, History, and Phonetics. One hour daily. Half-term credit. Professor Hopkins.

9.—The Teaching of English. Lecture and conference course in principles and methods of teaching composition, literature, and language. Two hours daily. Full-term credit. Professor Hopkins.

Notes.—Course 1 in English literature and course 1 in rhetoric cannot both be given. If either is given, course 3 in rhetoric cannot be given as a credit course, but may be given as a popular course, without credit.

Course 3 in English literature and course 9 in rhetoric cannot both be given. If either is given, courses 6 and 8 in rhetoric cannot be given as credit courses, but one of them may be given as a popular course, without credit.

Full credit for course 9 in rhetoric requires some practice teach-

ing, which must ordinarily be done after the close of the Summer Session.

## FRENCH.

1.—Elementary French. A course for beginners, including the essentials of the grammar and easy reading, with careful drill in pronunciation. Oral and written exercises. Text-book, Fraser and Squair's French Grammar. Two hours daily. Professor Galloo. Full-term credit. Or,

The department will also offer either course 2 or course 3, according to the demand.

2.—This course is a continuation of course 1. It carries on the study of grammar, with easy composition and dictation, and some practice in speaking. An attempt is made to gain a good vocabulary by extensive reading of simple prose, such as Daudet's Selected Stories, Pouvillon's Petites Ames, and Sandeau's Mademoiselle de la Seiglière. Two hours daily. Assistant Professor Lincoln. Full-term credit. Or,

3.—This course may be taken by students having had one year of French, *i. e.*, courses 1 and 2, or their equivalent. It consists of the reading of some of the masterpieces of nineteenth-century prose; Colomba (Mérimée), La Chute (an episode from Les Misérables, by V. Hugo), Le Monde ou l'on s'ennuie (Pailleron), Le Crime de Sylvestre Bonnard (A. France), with practice in dictation, composition, and conversation. Two hours daily. Assistant Professor Lincoln. Full-term credit.

Teachers or others who, either for review or for a study of methods, desire to take any of the work outlined above, will be assigned conference hours for discussion of special points.

## SPANISH.

1.—Elementary Spanish. A course for beginners, in which the object is to obtain, at an early date, a practical reading knowledge of modern Spanish. Emphasis is laid on acquisition of the leading grammatical facts of the language, and a good pronunciation is carefully cultivated. The text-books are: Ramsey's Spanish Grammar, Fontaine's Doce Cuentos escogidos, Matzke's Spanish Reader. Two hours daily. Assistant Professor Bassett. Full-term credit.

## GERMAN.

1.—Outline of Grammar (Otis), with composition exercises. Carruth's Reader. Two hours daily. Professor Carruth and Assistant Professor Engel. Full-term credit. Or,

2.—Zschokke, Kleist, Heyse (100 pp.), and Wilhelm Tell. Also sight-reading. Two hours daily. Assistant Professor Engel. Full-term credit. Or,

3.—(1) Lessing's Minna von Barnhelm and Schiller's Geschichte des 30-jährigen Krieges; (2) Scientific German. Two hours daily. Assistant Professor Engel. Full-term credit.

Popular Course.—A review of the difficulties of German grammar. Drill in pronunciation. Discussion and demonstration of methods of teaching German in high schools. Criticism of text-books and notes on selection. One hour daily. Professor Carruth. Not for credit. This course is intended especially for those already engaged, or about to engage, in teaching German.

## GEOLOGY.

8.—Field Geology and Geography. Professor Haworth will conduct a course in field geology and geography, consisting principally of field-work in the eastern part of the state.

He will take the class into the field and will provide camping equipments or other means of subsistence, so that the expenses will be little, if any, greater than ordinary boarding in the city. The term will constitute a full term's work in geology or physiography.

## GREEK.

1.—A course in beginning Greek. Two hours daily.. Associate Professor Sterling. Full term credit. Or,

15.—A course in Greek literature through translations. Two hours daily. Professor Wilcox. Full-term credit.

## EUROPEAN HISTORY.

The attention of those who intend to take work in European history in the Summer Session is particularly called to the arrangement by which it is possible to pursue a continuous course from the 1st of April to the close of the Summer Session in that department. The courses that may be entered in April are 5, 9, and 15. The courses given in the Summer Session, while complete in themselves, are designed to afford systematic work for those students who take the above courses. The following courses will be offered for the summer of 1905:

4-5.—Mediæval and Modern History of Europe. This course will deal with the more important features of European development from the fall of Rome to the seventeenth century, and will, if desired, include the greater portion of the period covered by

course 7 under "The College." Emphasis will be placed upon the character of mediæval civilization, the intellectual and religious revolution of the fifteenth and sixteenth centuries, the establishment of the modern state system, and the beginning of the colonizing movement. Special attention will be given to bibliography, geography, and methods of teaching. Lectures, discussions, and library work. Full credit. Assistant Professor Becker. Or,

14–15.—Historical Method. This course deals with the methods of historical investigation and presentation, and more especially with the methods of teaching history. It will be found especially desirable for those teaching or about to teach in that field. Much of the course will consist of a review of European history, both general and in special periods and movements, to illustrate the various problems of study or teaching. Lectures, discussions, library work, and reports. Full-term credit. Assistant Professor Becker.

## LATIN.

Only two of the following courses can be given, the choice depending on the number of enrolments:

2.—Virgil's Æneid (six books). With study of mythology and careful practice in metrical reading. The chief stress will be laid upon the literary aspect of the work. Two hours daily. Full-term credit. Assistant Professor Oliver or Mr. Hendrix.

3*a*.—Cicero's De Senectute. With the first half of Bennett's Latin Prose Composition and a review of the treatment of cases in the grammar. One hour and a half daily. Half-term credit. Assistant Professor Oliver or Mr. Hendrix.

3*b*.—Livy, Book XXI. With the second half of Bennett's Latin Prose Composition and a review of the treatment of modes in the grammar. One hour and a half daily. Half-term credit. Assistant Professor Oliver or Mr. Hendrix.

Courses 3*a* and 3*b* together are the equivalent of course 3 in the General Catalogue; but the two authors are given side by side instead of consecutively, for the convenience of those who wish to give only half their time to the study of Latin. Bennett's Latin Prose Composition is given for the convenience of teachers who may wish to use that manual in teaching. Attention may be called to the fact that the entrance requirement in Latin composition is now rigidly enforced. Students who complete this course with high standing will be admitted to Latin 5, if they desire to continue their study of Latin in the fall term.

9.—Lucretius, and Vergil's Eclogues and Georgics. A

reading course, open to advanced undergraduates and graduates. Two hours daily. Full-term credit. Assistant Professor Oliver.

14.—Roman Political Institutions. A study of the development and form of the Roman governmental system, through the republic and early empire. The course will be conducted by lectures, and by individual investigations by members. Open to all who have had the full amount of preparatory Latin, whether or not they have specialized in the department. The course may be taken for credit by graduates. Two to three hours daily. Full-term credit. Mr. Hendrix.

## LAW.

Those who wish classes in subjects offered in the Law School should make application as early as possible, stating two subjects desired as first, and two as second choice. During the last session of the Summer School instruction in the following subjects was given: Contracts, Torts, Agency, and Insurance. This year each student will be permitted to take any two of the subjects given in the first two years of the regular law course, provided he be qualified to pursue such subjects, and there be a sufficient number of students enrolled for each subject desired. For a list of the subjects of the first two years of the law course the applicant is referred to page 238, this catalogue.

## MATHEMATICS.

1.—Solid Geometry. Professor Miller or Associate Professor Newson. Half-term credit.

2.—Algebra. Progressions, binomial theorem, undetermined coefficients, and logarithms. Text-book, Wentworth's College Algebra. Professor Miller or Associate Professor Newson. Half-term credit.

3.—Plane Trigonometry. Text-book, Miller. Required of all Freshmen in the College or the School of Engineering. Professor Miller and Associate Professor Newson. Half-term credit.

Any two of these three will give a full-term credit.

4.—Analytic Geomety. Sophomore alternative in the College. Required of all Freshmen in the School of Engineering. Associate Professor Newson. Or,

5.—Calculus. Text-book, Osborne. Must be preceded by course 3. Sophomore alternative in the College. Required of all Sophomores in the School of Engineering. Professor Miller.

A TEACHERS' COURSE IN MATHEMATICS.

The last two years have witnessed a remarkable revival in this country and abroad of interest in the teaching of mathematics and in the question of its proper place in the curriculum of the schools. In all sections of the country teachers' associations and other interested people are eagerly discussing questions of mathematical reform in the grammar grades and high school. Special organizations have been formed in many parts of the country to deal with these questions, and a special journal has been founded to furnish a suitable forum for such discussions.

There is already a wide-spread interest in this movement among Kansas teachers, and many of them are desirous of knowing for themselves more of the relative merits and demerits of the present system as well as the character and extent of the proposed changes. To meet the wants of this large body of teachers the following course is offered at the Summer Session:

10.—TEACHERS' COURSE IN MATHEMATICS. This course is designed for teachers, and students who are preparing to become teachers of mathematics. It embraces the history, pedagogy and mutual relations of the mathematical subjects usually taught in the public schools from the beginning of the seventh grade to the end of the high-school course. The course consists of (1) history of mathematics, reading, and lectures; (2) a comparative study of the mathematical curricula of the schools of this country and of Europe; (3) a consideration of the best order of taking up the different subjects; and (4) the best methods of teaching the different topics. Prerequisites: Any one holding a teacher's certificate in Kansas is qualified to enter this course. Associate Professor Newson.

## MUSIC.

The School of Fine Arts will offer courses in piano, technic, harmony, voice, and violin, under Professor Skilton, Professor Hubach, Miss Greissinger, and Professor Wylie.

The courses in piano and violin will consist of classes in technic, interpretation, and private lessons.

The work in theory will include classes in harmony and private instruction in counterpoint, musical analysis, and composition.

Voice instruction will be given privately and in classes. A feature of the course will be work in advanced vocalization, oratorio, and opera, for the teachers and advanced students.

Faculty recitals will be given weekly for the benefit of students, and will be open to the general public.

For further information, send for special catalogue of the School of Fine Arts.

## PHILOSOPHY.

1.—Elementary Psychology. Two hours daily. Professor Boodin. Full-term credit. Or,

2.—Experimental Psychology. A laboratory course, following the texts of Sanford and Titchener, together with original investigations and readings from standard works and current psychological literature. Full-term credit. Assistant Professor Hogg. Or,

5.—Ethics. A psychological analysis of human conduct, a study of the content and philosophical meaning of goodness, the problem of evil, and some practical applications of ethical theory. Paulsen's System of Ethics, with assigned readings. Full-term credit. Professor Templin.

## PUBLIC SPEAKING AND READING.

Courses 1 and 2 carry full credit in the College. Course 1 is a Sophomore optional, but may be taken by Juniors or Seniors. Course 2 is an elective, open to Juniors and Seniors. Course 3 carries credit in the School of Fine Arts only.

1.—Principles of Spoken Discourse. An introductory course in the principles of public speaking. The course will offer training in the principles of good reading, graded exercises for the cultivation of the voice and for the removal of vocal defects, and directions for the construction and oral presentation of original speeches. Two hours daily, at 8. Assistant Professor Frazier. Or,

2.—Oral Debates. A course designed to give the student preliminary training in debate. The fundamental principles of debating will be discussed in detail; lectures will be given on the collecting and arranging of material and on the conduct of the debate. Weekly debates by the members of the class. Two hours daily, at 8. Assistant Professor Frazier. Or,

3.—Reading Aloud. A course designed as an aid to the teacher of reading in primary and secondary schools. A brief review of past elocutionary methods for the purpose of comparison with the more modern system of teaching. Methods for creating an interest in reading and suggestions for training the pupil to read intelligently and with feeling. Two hours daily, at 8. Assistant Professor Frazier.

## PHYSICAL TRAINING.

1.—School Gymnastics.—(*a*) Free-hand exercises; (*b*) exercises using the desks for apparatus; (*c*) exercises using the other pupils for resistance. One hour daily. Associate Professor Naismith. Not for credit.

2.—Games for the School Yard.—(*a*) Group games, *e. g.*, basket-ball, hockey, volley-ball, association ball; (*b*) individual games, *e. g.*, tennis, hand-ball, squash-ball, and field events. One hour daily. Associate Professor Naismith. Not for credit.

5.—Physiology of Exercise, including the effects of exercise on the muscular, the nervous, the respiratory, the circulatory and the digestive systems. One hour daily. Associate Professor Naismith. Half-term credit.

## PHYSICS.

1.—Physics 1. Recitations and laboratory work, six hours per day. May be taken by those having no previous training in physics. Must be preceded by algebra and plane geometry. A little trigonometry is recommended. Full-term credit. Assistant Professor Rice. Or,

2.—Physics 2. Lectures, experimental demonstrations, and recitations, two hours per day. Must be preceded by physics 1, or high-school physics and plane trigonometry. Students from high schools giving no laboratory work will be required to work in laboratory two periods (two hours) per week, in addition to the regular work. Full-term credit. Assistant Professor Rice.

3.—Popular Physics. Same as 2, the student merely attending and receiving no credit.

Physics 1, or 2 and 3, will be given, according to the greater demand.

## PHYSIOLOGY.

An advanced course in physiology, especially designed for teachers, nurses, and dentists, consisting of recitations, lectures, demonstrations, and practical experimental work in the laboratory. Hours to suit the majority of the class. Associate Professor Hyde.

## ECONOMICS AND SOCIOLOGY.

1.—Elements of Economics. This course aims to give a general knowledge of economic science and of some of its applications, and also to serve as preparation for more advanced courses. Active discussion of economic principles and problems is encouraged. Full-term credit. Or,

2.—Economic History of England and the United States. The object of this course is to trace and explain the general development of industries in England and the United States from about the twelfth century to the present time. Although this course and course 1 are mutually helpful, neither is required as preparation for the other. Full-term credit. Or,

7.—Commercial Geography and History. This is a study of the sources of the materials of commerce, both crude and manufactured; of trade routes and materials of commerce; and of the influence of geographical and historical conditions upon both. Full-term credit. Or,

1.—Elements of Sociology. This study includes the principles of sociology, and a careful survey of social laws, social theories, and social organization. Lectures and text-book, with collateral reading. Full-term credit.

## ZOOLOGY.

1.—Elementary Zoology. A course in the general principles of zoology. Laboratory work in the study of type specimens, and lectures upon classification, distribution, and habits. Associate Professor McClung. Full-term credit. Or,

4.—Histology. A course in the methods of microscopical technic and the structure of the normal tissues. Associate Professor McClung. Full-term credit. Or,

5.—Advanced Work in Cytology and Embryology. Open to students who have had training in courses equivalent to the work of 1 and 2. Associate Professor McClung. Full-term credit. Or,

16.—A course designed for teachers of zoology who wish to learn methods of preparing material for class use and for exhibition. Professor Dyche.

### Conferences.

For the benefit of teachers, conferences of those interested in a given study or group of studies will be held for the discussion of methods. Thus, the teachers of the state high schools and those of the University will be brought into the closest personal contact. The smaller size of all classes in the Summer Session will also prove an advantage in this respect, as the individual members will receive more personal attention than is possible during the regular sessions.

According to the demand, conferences will be organized in the following groups: Languages, history and economics, mathematics, English, biology, physical science, education and philosophy, sanitation and good roads.

## Lectures for 1905.

Three series of ten lectures each will be given by scholars from other universities. These, with the popular lectures by the members of the University Faculty, will make two series of popular lectures continuous throughout the session.

### Lecturers from Abroad.

11 A. M.

By PROFESSOR M. V. O'SHEA, B. L.,

University of Wisconsin.

**Education in the Light of Contemporary Thought.**

June 12. Motor Development and Motor Education.
" 13. The Development of Voluntary Ability.
" 14. The Child as Revealer of the Past.
" 15. Education for Social Efficiency.
" 16. Suggestion in Education and Life (two lectures).
" 19. The Physical Side of Education.
" 20. The Dogma of Formal Discipline in Education (two lectures), or, extra, Individuality in the Schoolroom.
" 21. The Trend of the Teens (two lectures).
" 22. Waste in Educational Work.
" 23. The Way in which One Learns, with Applications to Teaching (three lectures).

(Ten of the above.)

By PROFESSOR WILLIAM MCDONALD, PH. D.,

Brown University.

**The Constitutional and Political History of the United States during the Civil War and Reconstruction.**

June 26. Secession.
" 27. The Conduct of the War.
" 28. The Finances of the War.
" 29. Emancipation.
" 30. Lincoln's Plan of Reconstruction.
July 1. Congressional Reconstruction.
" 3. The South at the Close of the War.
" 5. The Progress of Reconstruction.
" 6. Impeachment of Andrew Johnson.
" 7. The Fourteenth and Fifteenth Amendments.

By Dr. A. E. Winship,
Editor *New England Journal of Education.*

July 7. Twentieth Century Standards (4:30 p. m.)
" 8. The Reign of the Common People.
" 10. The New Profession.
" 11. The New English.
" 12. Masterpieces.
" 13. Reminiscences of Orators.
" 14. Reminiscences of Authors.
" 17. Personality in Reading.
" 18. Authors who are a Present Delight.
" 19. Profits and Prophets.

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**Lecturers from the University.**

4:30 p. m.

(Lectures marked with a star are illustrated.)

Prof. E. Miller:
June 9. The Sun.*
" 12. The Nebular Hypothesis.*

Prof. F. W. Blackmar:
June 13. The Trust Problem.
" 14. The Mastery of the Desert.

Prof. A. M. Wilcox:
June 15. Greek Architecture.*
" 16. Greek Architecture.*

Prof. W. H. Carruth:
June —. The Nibelungenlied.*

Prof. E. Haworth:
June 20. The Mineral Wealth of Kansas.
" 21. Gold and Silver in the United States.

Prof. E. H. S. Bailey:
June 22. The Chemistry of Plant Growth.

Prof. C. E. McClung:
June 23. Problems of Heredity.

Prof. R. D. O'Leary:
June 26. English Miracle Plays.

Prof. A. S. Olin:
June 27. Horace Mann.
" 28. Arnold of Rugby.

Prof. H. P. Cady:
June 29. Liquid Air.*
" 30. Radium.*

Prof. C. G. DUNLAP:
July 1. "As You Like It" (10 A. M.)
" 3. "Macbeth."

Prof. OLIN TEMPLIN:
July 5. The Significance of Art.

Dr. E. BECKER:
July 6. Froude.

Prof. E. GALLOO:
July 7. Monuments of Paris.*
" 8. Victor Hugo (10 A. M.)

Prof. M. A. BARBER:
July 10. Bacteria and Disease.

Prof. W. C. STEVENS:
July 11. Gardening for Homes and Schools.
" 12. Interesting Plants.

Prof. E. M. HOPKINS:
July 13. Transcendentalism in American Literature.

Prof. J. NAISMITH:
July 14. Athletics for High Schools.

Prof. EDGAR G. FRAZIER:
July 17. "As You Like It."
" 18. Paola and Francesca.

Prof. E. M. HOPKINS:
July 19. Personal Initiative in Teaching (10 A. M.)

All these lectures, as well as those by scholars from abroad, and all other recitals and entertainments given under the auspices of the University, are open to those who have paid the general fee for the Summer Session.

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**Bible Chair Lectures.**

During the first three weeks of the Summer Session, June 8 to June 29, the following lecture courses will be given by the incumbents of the Bible chair of the Christian church:

By Prof. W. C. Payne:
I. The Days of the Apostles.
II. The Parables and Miracles of Jesus.
III. The Teachings of the Old Testament Sages.

By Mrs. W. C. Payne:
I. The Women of the Bible.
II. The History of Missions.
III. Heroes of Missions.

# PART IV.

## Institutions Connected with the University and under its Control.

# IX. The Libraries.

The libraries of the University contain 48,500 volumes and 32,000 pamphlets. These numbers are increasing as rapidly as funds will permit. An annual appropriation of $7000 is devoted to the purchase of books, and about 4000 books and 2000 pamphlets will be added during the year 1904–'05. The books are selected with the greatest care, and the endeavor is made to furnish the students with the latest and best authorities in the various departments. The library is sufficiently large to enable the student to prosecute research and to furnish him substantial aid in his investigations. Source material in American and European history and in other subjects is being constantly collected, and affords in some lines all necessary material for advanced original work.

**The University Library.** The University library is in the Spooner Library Building, and is open every day in the year excepting Sundays and holidays. Library hours are from eight A. M. to six P. M.; Saturdays, from eight A. M. to twelve M. The reading-room is open from seven P. M. to ten P. M. when the University is in session. Liberal facilities for using the library are offered to all members of the University. All books, except reference books and books too rare to be easily replaced, may be taken from the library by the students for three weeks. However, if a book is needed for a special purpose or a class reservation, it may be recalled by the Librarian, and must be returned at once after notice is received.

Book-stacks. There are five stories in the stack-room of the library, each eight feet high, making all the books within easy reach. The stacks and the flooring of these rooms are of steel, thereby making a perfectly fire-proof depository for the books. Books are classified and arranged on the shelves in the stack-room by the Dewey system of classification.

Catalogue. The catalogue of the library contains about 60,000 cards. It is arranged alphabetically both as to author and subject, and the author and subject cards are catalogued together. The cards are arranged in cases in the general reading-room, making them entirely accessible to both instructors and students.

The General Reading-room. The general reading-room is a large, comfortable, well-equipped and unusually well-lighted room,

on the main floor of Spooner Library. It is furnished with 200 electri clamps. In this room are about 1000 volumes of general reference books, cyclopedias, dictionaries, and Poole's Index to Periodical Literature, and other books which are of special value to students for reference purposes.

Departmental Reading-rooms. The departments of German, philosophy, Latin, English and mathematics have reading-rooms on the lower floor of the Library, and the departments of American and European history, sociology and economics have the whole of the upper floor of the building.

Periodical Room. The University provides in this room 624 periodicals and learned-society publications and 158 state newspapers, all of which are at the service of instructors and students. The list of periodicals is very large, and includes almost all of the important publications of America and Europe.

Offices, etc. Offices for the Librarian and cataloguer and the accession room adjoin the general reading-room, and on the lower floor are storerooms, etc.

Department Libraries. Besides the books in Spooner Library building, there are eleven departmental libraries in the different buildings of the University. They are placed in close conjunction with the various laboratories and lecture-rooms, so as to be immediately accessible to students engaged in scientific work.

The Law Library. The law library is located in the Law Building. It contains upwards of 3000 volumes.

**The Lawrence Public Library.** The public library of Lawrence is accessbile to students. A new Carnegie building has been erected and is now occupied. This library now contains about 6000 volumes, mainly of general literature and fiction, and, therefore, supplements the University library in that direction.

# X. The Gymnasium.

The legislature of 1905 appropriated $100,000 to be used in the erection of a Gymnasium and Auditorium. Work will commence on the building in July, 1905. The arrangement and equipment will be modern in every particular. When completed, this building will be the finest gymnasium in the West. (See page 41.)

Until the new gymnasium is ready for occupancy, the physical-training classes will be held in the old gymnasium. This is located in Snow Hall, occupying all of the basement floor. The main exercise room is 86x36x14 feet, and has been refitted so that it is now a pleasant room, well lighted and heated. It may be divided into two rooms by large folding doors, permitting two classes to work at the same time. Another room is set aside for small classes, or for special work by those who are unable to take the regular work, or who need special developing exercises.

The gymnasium is designed to benefit all students of the University, not only by giving an opportunity for general exercise and healthy recreation, but also by providing means of caring for the body, correcting faulty attitudes and functions, developing skill, physical judgment, and self-control. It provides, therefore, for specific training in view of any physical defects that may be remedied by proper care.

The department is under the supervision of a director who is himself a trained physician. He gives courses in physical education in the College designed especially for those who intend to teach.

**Examinations.** A thorough physical examination and measurement is offered each student and a record of results is kept as a basis for advice for exercise. The results are platted on charts, so that the student may compare himself with others and note the progress he is making. Those taking work in the gymnasiun or on the athletic field must pass a satisfactory examination on entering the sport. At any time that the health of the student demands it, he is debarred from taking part in any form of exercise that may injure him.

The director's office is equipped with apparatus for taking measurements and for making tests of health, skill, and strength.

The gymnasium is open from eight A. M. to six P. M. each day excepting Sundays.

**McCook Field.** McCook Field, the gift of Col. John J. McCook, is situated only a short distance from the University and gives opportunity for all forms of outdoor athletics and sports. It contains a baseball diamond, a football field, a running-track, and facilities for field athletics. A grand stand and bleachers accommodate the spectators.

## XI. The Museums.

The museums of the University are extensive and valuable. The collections were begun thirty-five years ago by Dr. Francis H. Snow, and have been obtained chiefly during the past thirty years by University exploring parties in western Kansas, Colorado, Wyoming, Arizona, New Mexico, Texas, British America, Alaska, Greenland, and South America. The expeditions have been mainly under the direction of Dr. Francis H. Snow, Dr. Samuel W. Williston, and Prof. Lewis L. Dyche. By means of the material thus accumulated, a system of exchange has been established with leading institutions and naturalists in all parts of the United States, so that the cabinets contain a very satisfactory representation of the plants, insects, mammals, birds, minerals, and fossils, not only of the state of Kansas, but also the whole of North America. The collections are nearly all housed in the Museum of Natural History, completed in 1903 at a cost of $75,000.

Several expeditions were sent out in the summer of 1904. Dr. F. H. Snow conducted two parties for the collection of insects for the museum of entomology, one to Arizona and one to Texas. Many new species were taken.

Mr. Handel T. Martin, assistant curator of the paleontological department, returned during the autumn of 1904 from a collecting expedition to South America, where he worked north from Punta Arenas, on the Straits of Magellan, into Patagonia. The expedition devoted itself especially to paleontology and zoology, and was gone a year. As a result of the expedition, the University now has a fair representation of the peculiar edentate fauna of that country.

Prof. M. A. Barber led an expedition for botanical collections into Minnesota, North Dakota, Assiniboia, Alberta, and British Columbia, in the summer of 1903. The greater part of the work, which was very successful, was done in the Canadian Rockies and Selkirks. The work was chiefly with flowering plants, but cryptogams were also collected.

Prof. Clarence E. McClung and Mr. M. W. Blackman, of the department of zoology, also made valuable collections for class use in the summer of 1903. Mr. Blackman collected ocean fauna in the Bermudas, and Professor McClung and Mr. Blackman together se-

cured specimens in embryology and cytology at Woods Hole, Massachusetts.

In the summer of 1904 Professor McClung, with a party of five, made extensive additions to the Cretaceous vertebrate material in the museum by collections from western Kansas.

**Entomology.** The entomological collection is the largest connected with any educational institution in the United States. It contains more than 20,000 species and 200,000 specimens, representing all the different orders of insects. Nearly the whole of this material has been obtained by the expeditions conducted by the head of the department of systematic entomology during the summer vacations of the past thirty years, supplemented by a system of exchanges with collectors and museums in all parts of the world. The orders of Lepidoptera, Coleoptera and Diptera are especially well represented. Among the Lepidoptera, there are nearly 100 "types" of species described by Grote and Henry Edwards; among the Diptera, there are nearly 600 "types" of species described by Williston, Townsend, W. A. Snow, Aldrich, Adams, Day, Whitney, and Brown; and among the Hymenoptera, 300 "types" described by Vierech.

The cabinet of Coleoptera contains 8000 North American species and 2000 European and exotic forms, and the Lepidoptera and Diptera include 3000 species of each order.

The instruction in this department has special reference to the discrimination of the beneficial from the injurious species, and the extensive collections are of practical value to the agricultural and horticultural interests of the state as well as to the students of the University in the determination of the names and habits of our insect friends and foes.

There is no other university in the country where the advanced student of systematic entomology can find ready access to such an abundance of material for the prosecution of his researches. The collection occupies part of the second and third floors of the Museum of Natural History.

**Zoology.** The collection of large mammals indigenous to the North American continent is one of the most complete in the world. The specimens include the more common and well-known animals of the United States, an excellent representation of the animals of the Atlantic coast as far north as Cape Sabine and from the continent of Greenland. Also a series from the Pacific coast as far north as the Aleutian islands and from the interior of Alaska. This large collection is now being put on exhibition on the second floor of the new natural history building. The collection will occupy the entire

floor, which will be known as "Mammal Hall." New material is constantly being added, and mounted for study and exhibition.

Many thousands of specimens in the shape of skins, skeletons, and skulls, packed away for years in drawers and cases for the want of space for proper exhibition, are now on exhibition in the new museum building. These are available for students in zoölogy and comparative anatomy, and are used by instructors to illustate their various lectures.

In the ornithological collections there are between 3000 and 4000 specimens, most of which are carefully protected in moth-proof cases. Many of these are unmounted skins, furnishing ample material for laboratory study when fresh specimens cannot be readily obtained. There is also a fine series of skeletons, representing species in size from the shrews and bats to elephants and whales. These specimens are of great value to students in osteology and paleontology.

An alcholic collection of marine radiates, mollusks and articulates from the Atlantic and Pacific coasts affords to the zoological students the means of investigating the anatomical structure of the leading forms in all the great types of the animal kingdom.

In the conchological cabinet are included nearly 1000 species of shells, from all parts of the world.

Recently extensive additions to the invertebrate collections have been made by expeditions to Bermuda and to the northern Atlantic coast, as noted above. While specimens from all the branches were collected, special attention was directed toward the Porifera, Cœlenterata, and Echinodermata. The teaching museum is now well supplied with representative specimens of all the invertebrate orders.

**Paleontology.** The collections in paleontology offer the best facilities not only for instruction in general stratigraphic geology, but also for special advanced work in systematic paleontology. The collections of invertebrates include about 2000 species, distributed among about 500 genera. They represent all of the principal geologic formations, but are especially rich in Kansas forms. The numbers of genera and species from the chief geologic groups are nearly as follows:

Tertiary, 80 genera, 200 species.
Cretaceous, 80 genera, 200 species.
Jurassic, 10 genera, 30 species.
Triassic, 25 genera, 75 species.
Permo-Carboniferous, 60 genera, 750 species.
Devonian, 80 genera, 300 species.
Silurian, 75 genera, 250 species.
Ordovician, 90 genera, 250 species.
Cambrian. 20 genera, 30 species.

The collection of fossil vertebrates, with but a few exceptions, is the most extensive in America, and in the Cretaceous forms is unequaled elsewhere. From the Miocene Tertiary of Kansas, Wyoming and South Dakota nearly all the known genera are represented. The Cretaceous animals are represented by many hundreds of specimens, including not a few of exceptional perfection and completeness. The mosasaurs include five genera and twelve or fifteen species, showing in most of them the complete anatomy. Of fossil birds, the best specimens known are in the museum, and some of che specimens of pterodactyls and plesiosaurs are unequaled in any other collection. Nearly all genera of the Cretaceous fishes are represented, and, in some cases, by exceptional specimens. A creditable series of turtles, including a number of type specimens, is contained in the collection. From the Laramie Cretaceous, the most notable specimen is a mounted skull of the gigantic dinosaur *Triceratops*. From the Permian and Carboniferous there are also a number of valuable specimens. All together, about 400 species of extinct vertebrates are represented in the museum.

Valuable additions are constantly being made to the collections, both of invertebrates and vetebrates, chiefly by field expeditions. Perhaps the most important of these is a new species of plesiosaur, which has been thoroughly restored and mounted as an entire skeleton. It is without doubt the finest specimen extant. All the collections have been gone over and a card catalogue prepared, so that reference to the specimens is much easier. The collection occupies the most of the upper floor of the Museum of Natural History.

**Paleobotany.** The collection in paleobotany is especially rich and valuable, representing thousands of specimens. The Dakota and Comanche Cretaceous series are the most extensive, and include many types of species and undescribed forms. In addition to the collection of Tertiary plants, there is a very large and valuable series of Carboniferous plants from Kansas, including many new forms yet unknown to science. The collection is placed with that of paleontology. The purchase of a number of cases has made it possible to put on exhibition many more specimens than have before been open for public inspection.

**The Herbarium.** The herbarium includes about 7500 specimens, identified and labeled, of flowering plants, besides much material partly identified. The flora of the western Rocky Mountains is especially well represented. There is also a considerable amount of cryptogamic material, including sets of economic fungi of North America and of North American lichens. The herbarium is housed in Snow Hall.

**Geological Collections.** The museum of economic geology and physical geology contains many hundred specimens. In economic geology there is a large collection of ores of various kinds, especially chosen to represent, first, the character of the ores, and second, the mode of ore formations. Specimens of almost all kinds of ores and other economic products, such as gypsum, coal, oil, etc., are included, and arranged in accordance with the two ideas: first, of economic value, and second, of origin or formation. Specially to be mentioned in this connection is a very complete collection of lead and zinc ores and associated minerals from the Galena-Joplin district, which is the greatest field for mining zinc ore known in the world.

The petrographic collection contains about 2000 specimens of crystalline rocks from all parts of the world, including the largest collection ever made of granites, porphyrites, and basic dike rocks from the area of crystalline rocks in Missouri. There is also a large and specially selected collection of crystalline rocks from New Hampshire, and another collection from the Lake Superior region.

The mineralogical collection is divided into two groups: first, a working collection for students in the mineralogical laboratory, and second, an exhibitive collection for the museum. The former contains fair specimens and material for use in the laboratory, but representing all the leading classes of minerals, while the latter contains more pretentious and showy specimens, more generally interesting to the public.

**The Classical Museum.** The classical museum contains full-sized plaster casts of the Hermes of Praxiteles, the Venus of Melos, the so-called Theseus of the Parthenon, three Metopes and fifty-five feet of the frieze of the Parthenon, the Lenormant statuette of Athena Parthenos, the Opheus relief, the Satyr and Mænad relief, the Borghese Warrior, Augustus in military dress, the so-called Germanicus, eighteen busts of Greek sculpture, and Greek and Roman authors and emperors, two Tanagra figurines, and the Nike of Paionios inscriptions.

Models of the Acropolis of Athens, the east pediment of the Zeus temple at Olympia, the Victory of Paionios, and the Vatican Amazon.

Relief maps of Athens and Rome.

Laloux's restorations of Olympia, Defrasse's restorations of Epidaurus, Pontrēmoli's restoration of the Pergamon, and Weichardt's restoration of Pompeii.

Stuart and Revett's Antiquities of Athens, 363 plates; Penrose's Athenian Architecture, 47 plates; Inwood's Erechtheum, 39 plates; Bohn's Propylæa, 21 plates; Ross, Schaubert and Hansen's Athena Nike Temple, 13 plates; Michælis's Parthenon, 15 plates; Cockerell's Temples of Ægina and Bassæ, 37 plates; Koldewey and Puch-

stein's Temples of Lower Italy and Sicily, 29 plates; Major's Temples of Pæstum, 25 plates; Adler's Mausoleum, 5 plates; Le Roy's Ruins of the most beautiful monuments of Greece, 60 plates; Fenger's eight colored plates of Doric architecture; the plates of the final reports of the excavations at Assos and Delphi, as far as they have yet been published; Piranesi's large engravings of the columns of Trajan and Marcus Aurelius; twelve photographs of architectural models in the Metropolitan Museum, New York.

A complete set (560 so far) of Brunn's plates of Greek and Roman sculpture; 55 Braun photographs of the Elgin marbles; 139 plates of the Sabouroff collection of sculpture, terra-cottas, vases, and bronzes; Furtwængler's ancient gems, 67 plates; 82 plates of the silver vases and utensils found at Hildesheim and Boscoreale; 6 colored plates of Odyssey paintings found in Rome, Dodwell's; 30 view's of Greece, in color; Lau's and Genick's 84 colored plates of Greek vases; 27 colored plates of Greek vases in the British Museum; Furtwængler and Loeschke's Mycenæan vases, 49 plates; Harrison and MacColl's Greek vases, 43 plates; Furtwængler and Reichhold's large plates of Greek vases, as far as they have been published, 50; 11 colored plates of Greek and Etruscan terra-cotta sarcophagi in the British Museum; Preller's four cartoons of wall-paintings of ancient Greek landscapes in the Albertinum, at Dresden; 39 plates of Monumenti Inediti and Antike Denkmæler vases, sculpture, and architecture; 650 photographs illustrating Roman topography and life.

A *facsimile* of the whole of the Bacchylides manuscript; 36 plates of other Greek manuscripts; 25 *facsimiles* of Biblical manuscripts in the British Museum; 30 *facsimiles* of the Flinders Petrie Egyptian Greek papyri; 62 plates of Latin manuscripts; Roehl's collection of oldest Greek inscriptions, many of them in *facsimile*.

Baumeister's monuments of classical antiquity, 95 plates and 2400 illustrations; 1800 stereopticon slides of Greek and Roman views, portraits, buildings, statues, paintings, vases, and manuscripts.

The classical museum is located in Fraser Hall, south wing, second floor.

# XII. The University Geological Survey of Kansas.

As explained below, the Geological Survey is work undertaken for the good of the state without compensation to members of the Faculty. It is state work, and should be done by a state institution and without cost to the state other than necessary expenses. The department of geology and mining, through its head, who is also superintendent of the Survey and state geologist, works through and in conjunction with the Survey to develop as large as possible the mineral resources of the state. The results already have been of very great value to the state, especially in the development of coal, oil, gas, Portland cement, gypsum and its products, clay manufactures, etc.

The University Geological Survey of Kansas was organized by the Board of Regents of the University in 1894, under authority conferred by legislative act, and is supported by direct legislative appropriations. The object of the organization is to accomplish a geological survey of the state as rapidly as possible—a survey giving a complete exposition of the geological and mineralogical resources of the state, including all subjects of economic and scientific importance.

It is contemplated that the work will be done by members of the University Faculty and advanced students, so that the cost to the state will be a minimum. The Faculty of the College recognizes such student work by giving credit for it, the same as for work done in the classrooms and laboratories of the University.

Work was first begun on the Survey in the summer of 1893, and has been carried forward steadily ever since. During that summer the department of physical geology had three assistants doing field-work; in 1894, four; in 1895, twelve; in 1896, twelve; in 1897, seven; in 1898, five; in 1899, five; in 1900, four; in 1901, five; and in 1902, five. The subjects thus far investigated are: The general stratigraphy of the entire state; the coal-fields; salt; gypsum—on all of which special reports have been published. In addition, much work has been done in the investigation of the lead and zinc ore deposits of the state, and a report on the same is nearing completion. A large

amount of work has also been done in investigating the oil and gas territory in the southeastern part of the state, but at least one more summer must be devoted to field-work along this line before a report can be prepared.

The department of paleontology of the University has likewise done a large amount of work investigating the fossil fauna and flora of the state, and has published two reports on the subject.

The department of chemistry has made an investigation of the mineral waters of the state and has published a report on the subject.

The Survey has already published the following reports, all of which are for free distribution, the recipient paying transportation charges. (Those marked with a star are out of print.)

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|---|---|---|
| Volume I, 1896 | —Reconnaissance Report on General Stratigraphy of Eastern Kansas.* | |
| Volume II, 1897 | —General Geology of Western Kansas.* | |
| Volume III, 1898 | —Special Report on Coal..... | 28 cents. |
| Volume IV, 1898 | —On Upper Cretaceous Paleontology.* | |
| Volume V, 1899 | —Special Report on Gypsum and Gypsum Cement Plasters ..... | 16 cents. |
| Volume VI, 1900 | —Carboniferous Invertebrates and Cretaceous Fishes..... | 28 " |
| Volume VII, 1902 | —Mineral Waters..... | 20 " |
| Report on Mineral Resources of Kansas for 1897..... | | 4 " |
| Report on Mineral Resources of Kansas for 1898.* | | |
| Report on Mineral Resources of Kansas for 1899..... | | 4 " |
| Report on Mineral Resources of Kansas for 1900 and 1901.. | | 5 " |
| Report on Mineral Resources of Kansas for 1902..... | | 7 " |
| Report on Mineral Resources of Kansas for 1903..... | | 3 " |

Volume I is devoted entirely to reconnaissance work in stratigraphy and a preliminary description of the general geology of eastern Kansas, with a short description of the oil- and gas-fields of the state and a preliminary catalogue of invertebrate fossils found in the Carboniferous age.

Volume II is a similar description of the stratigraphy and other features of general geology of western Kansas, being a companion to volume I. It has a short chapter on some phases of vertebrate paleontology.

Volume III is a special report on coal, giving a general account of the stratigraphy of eastern Kansas, the most extensive yet published, and a detailed account of the coal-bearing strata of the state, methods of mining, the chemical and physical properties of Kansas coal, and other points of a like nature.

Volume IV is devoted entirely to the paleontology of the Upper Cretaceous. It is profusely illustrated with plates and cuts of vertebrate fossils from western Kansas.

Volume V is a special report on gypsum and gypsum cement plasters, giving the results of about three years' investigation. This is probably the best account yet published on this interesting product.

Volume VI is the second volume on paleontology, and is occupied jointly by Carboniferous invertebrates and Cretaceous fishes.

Volume VII is devoted entirely to the mineral waters of the state, and gives a description not only of the mineral waters of Kansas, but of mineral waters in general.

The series of annual reports began with a report on the mineral production of the state for 1897, and has been issued annually ever since, excepting one year. The reports for 1900 and 1901 were issued jointly. Largely they are repetitions of the same subjects, as each one of them contains a complete summary of the total state production to date. They cover the subjects of gold, silver, lead and zinc, coal, oil, gas, clay products, gypsum, hydraulic and Portland cements, building stone, and salt.

The report for the year 1902 was delayed in publication and thereby admitted a short report on the extraordinary flood of the Kansas river in May and June, 1903. The report for 1898 contains an extended description of Kansas salt as a special article, and similarly the report for 1902 has a specially prepared chapter on Portland cement.

# PART V.

## Degrees Conferred and Lists of Students.

# Degrees Conferred.

## June, 1904.

### Master of Arts.

Charles Ernest Carpenter.
Walter Warren Filkin.
Jessie Lee Hart.
Angie Horn.
Fred Keplinger.
Cora Mathes.
Ray E. Merwin.
Elmer V. McCollum.
Ida E. McKnight.
Frances E. Norris.
Miriam A. Palmer.
Howard A. Sawyer.
Andrew Watson Sellards.
Oscar B. Seyster.

### Master of Science.

Elijah N. Johnson.
John Stephen Worley.
John Eric Welin.

### Bachelor of Arts.

Lucy Abel.
Mary Louise Alder.
Charles Whedon Ashbaugh.
Fred Eastes Barnett.
Jennie M. Barrett.
Arthur Herbert Basye.
Jessie Bird Bennett.
Philemon Preston Bliss.
Ephraim Monroe Bowers.
Charles Francis Brook.
Lillian Bunton.
James Homer Burress.
Mary Burwell.
Everett Burns Chaney.
John William Clardy.
Kate Cecelia Clark.
Mabel Coffman.
Virginia Elizabeth Coleman.
Mary Collins.
Ernestine Ione Copeland.
Edward Sheffield Cowdrick.
Clare Joseph Cowley.
Marvin Creager.
Caryl J. Dodds.
M. Gussie Duke.
Walter D. Easton.
Ralph Waldo Ellis.
Thomas B. Ford.
Mary Florence Forest.
Emma Louise Fryhofer.
Lina E. Gano.
Marie A. Greene.
John Greenlee.
Ora Nell Griesa.
George Thacher Guernsey, jr.
Florence Amanda Hedger.
Murray Gardner Hill.
Henry William Hoffman.

**Bachelor of Arts** — *Concluded.*

Edna Frances Holsinger.
Maud Agnes Holsinger.
Fred Clinton Householder.
Herman Hulbert.
Myron Embeck Humphrey.
Caroline Elizabeth Jaycox.
Philip Jeans.
Mary E. Johnson.
Mary Virginia Kellogg.
Karl E. Kilby.
Albert Russell Killgore.
George D. Kuns.
Martha Lauterbach.
Neva Elena Lehman.
William Henry Livers.
Grace Medes.
George L. Metcalf.
Bessie Eunice Miller.
Hettie Mossler.
Ethel L. Murphy.
Earle Walter Murray.
Mabel McLaughlin.
Claudia Estelle McNair.
Malcolm N. McNaughton.
George Murrell Nutting.
Stella Olcott.
Roxana H. Oldroyd.
Eleanor S. Patterson.
Juanita Mildred Peacock.
Ethel Clara Peters.
Sarah Alice Piatt.
Inez Rhya Plumb.
David Chalmers Porter.
Charles Harker Rhodes.
Bertha Viola Roberts.
Dean Humboldt Rose.
Richard Scammon.
Bertha Louise Schall.
Josephine Horton Searles.
Hazel Kirke Smith.
Trussie Smothers.
Caroline B. Spangler.
Mida Stanton.
Otis Dexter Swenson.
Cora Alice Taylor.
Agnes Unruh.
Bertha Jones Virmond.
Stella Sophia Wangerien.
Jennie Wasson.
Attis A. Whipple.
E. Ambrose White.
Nellie Marie Wilhelmi.
George Hathaway Willis.
Jasper Bird Wilson.
Rea Wilson.
Roy Walter Winton.
Bessie Marion Wood.
Clara Woodin.

**Bachelor of Arts in Law.**

Ray Campbell.
Benjamin Franklin Hegler.

**Bachelor of Science.**

William Ernest Baldry.
Harry Samuel Bedell.
Ora Allen Clark.
Lee Cook Diesem.
Frederick W. Epps.
Rollin Feitshans.
Benjamin Charles Hoefer.
Otto Lewis.
Jonta B. Marcellus.
Eliab Wight Metcalf.
Worth James Seamans.
Millard King Shaler.
Chester Alexander Smith.
Alexander Roscoe Stroup.
Austin Tucker.
Harry Williams.
John Stephen Worthy.

**Bachelor of Laws.**

Edgar Ray Adams.
Wallace H. Anderson.
George E. Battin.
Harleigh Benson.
Jay T. Botts.
Lynn W. Culp.
Raymond James De Lano.
Frank B. Dodds.
Richard W. Evans.
Walter Warren Filkin.
Michael J. Gernon.
Frank McCray Gold.
Clay Hamilton.
Thomas James Hanlon.
David Eustace Henderson.
Clyde S. Higley.
W. Clarence Hueston.
C. Ross Hume.
Charles Vincent Jones.
Harry Keene.
William Alfred Killey.
John L. Kirkpatrick.
Sydney Smith Linscott.
T. Belmont Losey.
Harry Blair March.
Freeman L. Martin.
Clarence Mansfield Mills.
Edward R. Moses, jr.
George Arthur Neeley.
George K. Powell.
Charles L. Rigdon.
William Rufus Seaver.
Algie Freeman Sims.
George H. Stuessi.
Walter William Sutton.
Edgar Wells.
John B. Wood.

**Bachelor of Music.**

Joseph Frank Jehlik.
Alice E. Leonard.
Maud Rush.

**Pharmaceutical Chemist.**

Charles J. Arbuthnot.
William Hall Billingsley.
Charley R. Braden.
Earl Brandon.
Edna Caldwell.
Luman F. Collins.
Glenn H. Deaver.
Oscar Glanville.
Harris C. Goodrich.
Willard Hines.
Frederick Robert Ireland.
Julian Jenkinson.
Herbert A. Johnson.
Walter Ernest Keef.
Jay D. Kuhl.
Maude Long.
Charles E. Mollett.
Fred W. Moore.
Walter Salathiel.
Albert B. Scanlon.
Leroy Williams.
Warren Wilson.

**Certificates in Medicine.**

Roy Cater.
John K. Harvey.
John Theodore Swanson.
Frank Schaeffer.

**Teacher's Diploma.**

Fred E. Barnett.
Cora E. Becker.
Lillian E. Bunton.
Mary E. Blue.
Jennie M. Barrett.
Kate C. Clark.
Mabel Coffman.
Virginia Coleman.
Henrietta Douthart.
Isabelle Hazen.
Henry W. Hoffman.
Edna F. Holsinger.
Maud A. Holsinger.
Fred Householder.
Martha A. Lauterbach.
Mabel McLaughlin.
Claudia McNair.
Ethel L. Murphy.
Stella M. Olcott.
Frank H. Olney.
Eleanor S. Patterson.
Juanita M. Peacock.
Ethel C. Peters.
David C. Porter.
Bertha Roberts.
Bertha Schall.
Hazel K. Smith.
Trussie Smothers.
George H. Willis.
Jasper B. Wilson.
Clara Woodin.

# Roll of Students.

## The Graduate School.

°Non-resident students.

*Seniors, the College, who have completed sufficient work for the A. B. degree and are doing graduate work.

*Adams, James Horner, A. B. '05, University of Kansas, *German*, . . . . . Lawrence.

Adams, Leverett A., A. B. '03, University of Kansas, *Zoology*, . . . . . Lawrence.

Alford, Anna M., A. B. '01, University of Kansas, *American History*, . . Lawrence.

Allen, Herman C., A. B. '04, McPherson College, *Chemistry*, . . . . . McPherson.

Andis, Elijah S., A. M. '03, University of Kansas, *History*, . . . . . Lecompton.

Bahner, Ralph Waldo, A. B. Lane University, *German*, . . . . . Clay Center.

Bamford, Geneva M., A. B. '01, University of Kansas, *European History*, . . Lawrence.

Barrett, Edward R., A. M. '02, Park College, *English*, . . . . . Lawrence.

Becker, Cora E., A. B. '93, University of Kansas, *Education*, . . . . . Lawrence.

Brown, Waitman Wiley, A. B. B. S. '99, Campbell University, *Chemistry*, *Physics*, . . . . . Lawrence.

*Burrows, Montrose T., A. B. '05, University of Kansas, *Entomology*, . . . Lawrence.

Clarke, Helen M., A. B. '03, University of Kansas, *English*, . . . . . Lawrence.

Clarke, Mary P., A. B. '03, University of Kansas, *History*, . . . . . Lawrence.

Cowles, Fred Ragland, B. S. Missouri School of Mines, *Mathematics*, . . . *Kansas City, Mo.*

Crawford, Ralph Kalloch, A. B. '01, Ottawa University, *Chemistry*, . . . . Ottawa.

*Cross, Roy, A. B. '05, University of Kansas, *German*, . . . . . Ellis.

*Deming, Claude, A. B. '05, University of Kansas, *History*, . . . . . Westmoreland.

Dickson, James, A. B. '01, University of Kansas, *Botany, Zoology*, . . . Auburn.
Dixon, Daisy, A. B. '99, University of Kansas, *Latin*, . . . . . *Paonia, Colo.*
Duke, M. Gussie, A. B. '04, University of Kansas, *Zoology*, . . . . . Lawrence.
Edenburg, Frank, A. B. '03, Bethany College, *Mathematics*, . . . . . Lindsborg.
*Fones, Jennie, A. B. '05, University of Kansas, *English*, . . . . . Lyons.
*Gatlin, Dana, A. B. '05, University of Kansas, *English*, . . . . . Paola.
*Gilchrist, Irene, A. B. '05, University of Kansas, *Latin, Greek*, . . . . *Kansas City, Mo.*
Griggs, Lulu M., A. B. '01, University of Kansas, . . . . . Lawrence.
Guernsey, George T., A. B. '04, University of Kansas, *European History*, . . Independence.
Gustafson, Carl F., A. M. '02, University of Kansas, *Chemistry*, . . . . McPherson.
Hammitt, Frank P., University of Indiana, *Mathematics*, . . . . . Hiawatha.
Hazen, Isabelle, A.B. '03, University of Kansas, *English*, . . . . . Lawrence.
Hill, Murray, A. B. '04, University of Kansas, *English*, . . . . . Eudora.
Hoff, Hans Jacob, A. B., Bethany, *German*, . . . . . Tully.
Hooper, Thomas H., A. B. '00, University of Kansas, *Geology*, . . . . . Smith Center.
Houdyshel, Cecil Ernest, A.B. '03, University of Kansas, *Entomology*, . . . Lawrence.
Hunnicutt, Gertrude O., A. B., University of Kansas, *Education, Sociology*, . . Lawrence.
*Iles, Victor, A. B. '05, University of Kansas, *European History*, . . . . Lawrence.
Keplinger, Fred, A. B. '00, University of Kansas, *Chemistry*, . . . . Oskaloosa.
Landis, May, A.B. '00, University of Kansas, *Physics*, . . . . . Lawrence.
*Landrum, Charles H., A. B. '05, University of Kansas, *History*, . . . . Frankfort.
Lauterbach, Martha Augusta, A.B. '04, University of Kansas, *History*, . . . Colby.

*Leidigh, Alma, A. B. '05, University of Kansas, *English History*, . . . . Hutchinson.
Lofty, John, A. B. '99, University of Kansas, *Botany*, . . . . . Salina.
Manley, Nettie E., A. B. '01, University of Kansas, *English*, . . . . . Junction City.
Manning, Alba Roy, A. B., University of Kansas, *Education*, . . . . . Gypsum.
Mathes, Cora Anna, *Latin*, . . . . Nickerson.
°Mayberry, James Willard, A. B. '01, University of Kansas, *Chemistry*, . . *Edmond, Okla.*
Merwin, Ray E., A. B. '03, University of Kansas, *Sociology*, . . . . . Lawrence.
Metcalf, George Leslie, A. B. '04, University of Kansas, *Geology*, . . . . Wellington.
Miller, Bessie Eunice, A. B. '04, University of Kansas, *Education*, . . . . Iola.
*Moodie, Roy L., A. B. '05, University of Kansas, *Paleontology*, . . . . . Lawrence.
Murphy, Ethel L., A. B. '04, University of Kansas, *French*, . . . . . Edwardsville.
Myers, Guila C., A.B. '02, University of Kansas, *History*, . . . . . Lawrence.
*Nelson, Earle, B. S. '05, University of Kansas, *Civil Engineering*, . . . Leavenworth.
Nowlin, Nadine, A. B. '03, University of Kansas, *Geology*, . . . . . Hiawatha.
Peace, Larry M., A. B. '01, University of Kansas, *Zoology*, . . . . . Lawrence.
Peacock, Juanita Mildred, A. B. '04, University of Kansas, *Education*, . . Atchison.
Pennington, Celia Emily, A. B. '98, University of Kansas, *English*, . . . Lawrence.
Rhodes, Charles Harker, A. B. '04, University of Kansas, *American History*, Wellington.
Roberts, Bertha Viola, A. B. '04, University of Kansas, *Physics*, . . . . Lawrence.
Roberts, Beulah S., A. B. '01, University of Kansas, *German*, . . . . . Lawrence.
Rohrer, Christian A., A. B. '97, University of Kansas, *Chemistry*, . . . . Kansas City.
Shane, Myrtle O., A. B. '02, University of Kansas, *English*, . . . . . Lawrence.

Shirk, James A. G., A. M. '02, McPherson College, *Mathematics*, . . . McPherson.
Smothers, Trussie, A. B. '04, University of Kansas, *Education*, . . . . Lawrence.
Stafford, Helen, A. B. '03, University of Kansas, *German*, *English*, *Sociology*, . Lawrence.
Stanton, Mida, A. B. '04, University of Kansas, *French*, . . . . . Lawrence.
Stanton, Evelyn, A. B. '02, University of Kansas, *Drawing*, . . . . . Lawrence.
Stewart, Alban, A. B., University of Kansas, *Botany*, *Paleontology*, . . . Lawrence.
°Stigall, Bennett Merriman, A. B. '01, University of Kansas, *Botany*, . . . *Kansas City*, *Mo.*
Stimpson, Edwin Fiske, B. S. '90, University of Kansas, *Physics*, . . . . Lawrence.
Stone, Sadie, A. B. '95, University of Kansas, *English*, . . . . . Lawrence.
Taylor, Cora A., A. B. '04, University of Kansas, *Botany*, . . . . . Lawrence.
Taylor, Mabel Willett, A. B. '01, University of Kansas, *Sociology*, . . . . Lawrence.
Thompson, Martha, A. B. '92, University of Kansas, *German*, . . . . . Kansas City.
Watson, Rachel H., A. B. '98, University of Kansas, *French*, . . . . . Lawrence.
Willis, George H., A. B. '04, University of Kansas, *Latin*, *Greek*, . . . . Lawrence.
Wilson, Jasper Bird, A. B. '04, University of Kansas, *American History*, . . Lawrence.
Woodin, Clara, A. B. '04, University of Kansas, *Zoology*, . . . . . Lawrence.
Worley, Albert Harrison, B. S. '03, University of Kansas, *Civil Engineering*, . Lawrence.

Graduates, 78.

## The College.

### SENIORS.

| | |
|---|---|
| Adams, James Homer, | Kansas City. |
| Alford, Hendry James, | Lawrence. |
| Anderson, Carrie Olena, | Morganville. |
| Anderson, Charles Otho, | Coffeyville. |
| Andrews, Austin Chandler, | Abilene. |
| Ardery, Lois, | Hutchinson. |
| Ashley, Mabel, | Pratt. |
| Axtell, Lilian, | Newton. |
| Bailey, William Hotchkiss, | Lawrence. |
| Baldridge, Myrtle, | *La Junta, Colo.* |
| Barber, Mabel, | Lawrence. |
| Barnett, Ada, | Atchison. |
| Bartlett, Samuel E., | Perth. |
| Beach, Albert, | Olathe. |
| Behimer, Otto, | Portland. |
| Bell, Bonnie, | Lawrence. |
| Bender, John F., | Holliday. |
| Bowden, Bessie, | *Albuquerque, N. M.* |
| Brown, Katie, | Lawrence. |
| Brownlee, Howard Joseph, | Lawrence. |
| Burrows, Montrose, | Halstead. |
| Carothers, Willis Herbert, | Hiawatha. |
| Carr, Clara May, | Leavenworth. |
| Carruth, Constance, | Lawrence. |
| Cope, Alfred B., | Osawkie. |
| Copley, Mary Cecilia, | Lawrence. |
| Corkhill, Charles Kneale, | Lawrence. |
| Cramer, Maude, | Lawrence. |
| Crawford, Irene, | Pratt. |
| Cross, Roy, | Ellis. |
| Cunningham, Kate Belle, | *Kansas City, Mo.* |
| Cureton, Nellie King, | *Red Point, Mo.* |
| Curl, Frankie, | Phillipsburg. |
| Davis, George L., | Lawrence. |
| Dean, Roger, | Peabody. |
| Deming, Claude, | Westmoreland. |
| Dillon, Gertrude, | Eureka. |
| Draper, Albert, | Oswego. |

Dryden, Daisy Dean, . . . . . Wichita.
Duerson, Fannie, . . . . . Hiawatha.
Faragher, Fred W., . . . . . Sabetha.
Fones, Jennie G., . . . . . Lyons.
Gabrielson, Esther J., . . . . . Hutchinson.
Gardner, Lulu, . . . . . Ness City.
Gatlin, Dana Elizabeth, . . . . . Paola.
Gentry, Robert Ernest, . . . . . Minneapolis.
Gibson, Charles M., . . . . . Cherokee.
Gilchrist, Irene, . . . . . *Kansas City, Mo.*
Gladfelter, William B., . . . . . Kansas City.
Goddard, Clarence Brock, . . . . . Leavenworth.
Gowans, Ralph, . . . . . Lawrence.
Graham, Agnes E., . . . . . Ottawa.
Gurnea, Zilora Maggie, . . . . . Belleville.
Haines, Metta Kouns, . . . . . Edwardsville.
Hammond, Winfield, . . . . . Olathe.
Hansen, Kate Ingeborg, . . . . . Logan.
Hartman, Frank A., . . . . . Kansas City.
Hayes, Lucile, . . . . . Lawrence.
Hayward, Grace, . . . . . Salina.
Henrichs, B. Edna, . . . . . Humboldt.
Hill, Lesley, . . . . . Lawrence.
Hirst, Eva, . . . . . Kansas City.
Hoar, Daisy, . . . . . Lawrence.
Hosford, Nadine, . . . . . Lawrence.
Hoskins, Roy Graham, . . . . . Hiawatha.
Hull, Vera, . . . . . Wichita.
Idol, Vera Blanche, . . . . . Highland.
Iles, Victor, . . . . . Independence.
Ise, Charles Daniel, . . . . . Downs.
Jacoby, Clark E., . . . . . Iola.
Johnson, Helen, . . . . . Oskaloosa.
Joseph, Anna, . . . . . Potwin.
Kimble, Pearl, . . . . . Paola.
Kirkwood, Elizabeth T., . . . . . Emporia.
Kreamer, Laura E., . . . . . Arkansas City.
Landrum, Charles Hansford, . . . . Frankfort.
Leidigh, Alma M., . . . . . Hutchinson.
Leonard, Annette, . . . . . Emporia.
Levan, Edith, . . . . . Lawrence.
Lindner, Ethel Florence, . . . . . Lawrence.
Lindsey, Lydia, . . . . . Mortimer.
Lucas, Paralee, . . . . . Lawrence.

| | |
|---|---|
| Miller, Henry B., | Rossville. |
| Miller, Lena Vivian, | Lawrence. |
| Moodie, Roy L., | Lawrence. |
| Morse, Eleanor F., | Mound City. |
| McCarty, Edith, | Iola. |
| Newman, Calvin Hood, | Emporia. |
| Newman, Mildred, | Kansas City. |
| Nye, Ella M., | Hiawatha. |
| Olin, Eva, | Lawrence. |
| Palmer, Emma, | Lawrence. |
| Pattison, John W., | *Cincinnati, Ohio.* |
| Reed, Trilla, | Iola. |
| Roberts, Vivian C., | Lawrence. |
| Reynolds, Jessie Annaherta, | *Gallup, N. M.* |
| Rose, Alice, | Fort Scott. |
| Russell, Marion Fore, | Great Bend. |
| Sellards, Kate L., | Lawrence. |
| Sellards Myrtle, | Lawrence. |
| Sexton, Roy, | Minneapolis. |
| Street, Margaret Hortense, | Lawrence. |
| Thompson, Margaret, | Parsons. |
| Walling, Lalia Viola, | Lawrence. |
| Walton, Lulu, | Lawrence. |
| Warren, Carrie, | *Oklahoma City, Okla.* |
| Washburn, Edetha, | Ottawa. |
| Wilder, Sarah Abigail, | Hiawatha. |
| Williams, John Taylor, | *Frankfort, Ky.* |
| Williams, May, | Osawatomie. |
| Winship, Eugenia, | Lawrence. |
| Wirt, Edith, | *Kansas City, Mo.* |
| Woodin, John, | Lawrence. |

Seniors, 113.

## JUNIORS.

| | |
|---|---|
| Ahlborn, Ida May, | Smith Center. |
| Alder, Helen A., | Lawrence. |
| Alford, Joseph Savage, | Lawrence. |
| Bailer, Lloyd, | *Kansas City, Mo.* |
| Baker, Eva, | Garden City. |
| Barlow, Frank T., | Wellington. |
| Bartholow, Wharton, | Williamsburg. |
| Battey, Lita Alleen, | Olathe. |
| Beckwith, Abbey, | Hiawatha. |
| Benn, Rara, | La Crosse. |

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| | |
|---|---|
| Bennett, Mary J., | Pittsburg. |
| Berger, Hedwig F., | Kansas City. |
| Bigelow, Oliver, | Lawrence. |
| Bliss, Charles J., | Oskaloosa. |
| Boright, Beth, | *Kansas City, Mo.* |
| Bowen, Mary Amelia, | Independence. |
| Boyle, Ellen, | Boyle. |
| Boyle, Grace I, | Boyle. |
| Brewster, Frances, | Thayer. |
| Brunner, Emile, | Onaga. |
| Cardwell, Della D., | St. John. |
| Carter, Anna May, | Reno. |
| Cates, Ada, | Chanute. |
| Clinger, Anna B., | Lawrence. |
| Collier, Capitola, | Liberal. |
| Collins, Olive, | Lawrence. |
| Cooper, Lawrence, | Lawrence. |
| Davies, Edwin P., | Fall River. |
| Davis, Rowena Mabel, | Garnett. |
| Dillon, Nelly, | Eureka. |
| Dinsmoor, Edna, | Lawrence. |
| Dixon, Marguerite, | Wichita. |
| Eby, Benton A., | Howard. |
| Eckley, Bessie, | Leavenworth. |
| Farquharson, Orville, | *Guthrie, Okla.* |
| Francis, John William, | Muncie. |
| Garrett, Violetta, | Lawrence. |
| Gephart, Frank, | Oskaloosa. |
| Gilmore, Gertrude, | Lawrence. |
| Glenn, Janet, | Paola. |
| Greenough, Birdie O., | Wilson. |
| Harris, Annie, | Lawrence. |
| Heinecke, Edwin Blakely, | Jewell City. |
| Heinzman, Harry L., | Topeka. |
| Hoar, Ethel, | Lawrence. |
| Hosford, Katherine, | Lawrence. |
| Hoskins, Elsie M., | Lawrence. |
| Hunt, George James, | *Kansas City, Mo.* |
| Johnsten, Margaret Eliza, | Delphos. |
| Jones, Margaret Effie, | Howard. |
| Kayser, Jesse W., | Milton. |
| Kent, Mabel Etta, | Paola. |
| Kilgore, Inez, | Wichita. |
| Kinne, Lou, | Moran. |

| | |
|---|---|
| Knott, Joseph Israel, | Yates Center. |
| Lahmer, Frances E., | Lawrence. |
| Langworthy, Amy E., | Leavenworth. |
| Legerwood, Vivian, | Norton. |
| Lindsay, Celia, | Lawrence. |
| Linton, Nita, | Lawrence. |
| Longenecker, Albert M., | Paola. |
| Maddox, Wilbur F., | Oberlin. |
| Makimson, Lista, | Kansas City. |
| Melvin, Frank E., | Iola. |
| Merwin, Ivah E., | Stockton. |
| Mitchell, Florence B., | Iola. |
| Nash, Ella, | Lyons. |
| Noyes, Elmira, | *Portsmouth, Va.* |
| Olander, Maude, | Kansas City. |
| Parkhurst, Jean M., | Topeka. |
| Philbrook, Margaret E., | *Kansas City, Mo.* |
| Pilcher, Georgia E., | Lawrence. |
| Pitcher, Arthur Dunn, | Havensville. |
| Rambo, Josie, | Winfield. |
| Reed, Gertrude G., | Topeka. |
| Riley, Carl E., | Paola. |
| Robertson, William Rees B., | Manchester. |
| Robinson, David B., | Lawrence. |
| Roller, Harry, | Lecompton. |
| Rose, Rial Catlin, | Ionia. |
| Rupert, Frank F., | Arkansas City. |
| Sargent, John Gibson, | McPherson. |
| Satterthwaite, Walter B., | Girard. |
| Shippy, Harvey, | Woodbine. |
| Siler, Charles A., | Lawrence. |
| Simmons, Henry Elliott, | Severance. |
| Sirpless, Eleanor, | Lawrence. |
| Smith, Mary Grace, | Hutchinson. |
| Starin, William Alfred, | Netawaka. |
| Stelter, Benjamin F., | Delphos. |
| Stelter, Grace May, | Delphos. |
| Sterling, Genevieve, | Lawrence. |
| Stevenson, Hazel, | Iola. |
| von Unwerth, Margarethe, | *Kansas City, Mo.* |
| Van Cleave, Maude Beryle, | Kansas City. |
| Virmond, Georgia, | Hays. |
| Weatherby, Leroy S., | Lawrence. |
| Weaver, Aileen, | Lawrence. |

West, Will G., . . . . . McPherson.
Wierenga, Charles, . . . . . Cawker City.
Wilhelmi, Alwine, . . . . . Lawrence.
Wulfekuhler, Fred O., . . . . . Leavenworth.
Zook, George Frederick, . . . . . Fort Scott.

Juniors, 103.

## SOPHOMORES.

Bailey, George Corbin, . . . . . Eureka.
Barker, Louise, . . . . . Girard.
Barnett, Ruth, . . . . . Wellington.
Bartholow, Edmund Montgomery, . . Williamsburg.
Bell, Blanche, . . . . . Lawrence.
Bernhard, Alva D., . . . . . Lawrence.
Bernhard, Lillie, . . . . . Lawrence.
Bernhard, Rillie, . . . . . Lawrence.
Bingler, Alberta Luckey, . . . . . Lawrence.
Blair, Gracia, . . . . . Lawrence.
Bousfield, Midian Othello, . . . . Kansas City.
Brannon, William A., . . . . . Lawrence.
Brock, Ivy Grace, . . . . . Girard.
Brownlee, Robert Clarke, . . . . . Horton.
Calhoun, William Kenneth, . . . . Fort Scott.
Campbell, Alice Birdine, . . . . . Wichita.
Campbell, Mary B., . . . . . Severance.
Carter, Anna Mabel, . . . . . Lawrence.
Clark, Earl Finley, . . . . . Overbrook.
Clarke, May, . . . . . Lawrence.
Colman, Clara, . . . . . Lawrence.
Conklin, Iola Belle, . . . . . McPherson.
Crofoot, Pearl, . . . . . Wilson.
Crumb, Ebb S., . . . . . Galena.
Cunnick, Ross, . . . . . Lawrence.
Daily, Dio D., . . . . . Columbus.
Dart, Edna R, . . . . . Lawrence.
Douglas, Roy O., . . . . . Mound City.
Engle, Earl William, . . . . . Topeka.
Essick, Inez Louise Wyman, . . . . Kanopolis.
Everett, Wilimina, . . . . . Fort Scott.
Finch, Howard A., . . . . . Neal.
Fisher, Wilhelm, . . . . . Lyons.
Foraker, Nora, . . . . . Wellington.
French, Bernice M., . . . . . Lawrence.
Gafford, Earl, . . . . . Minneapolis.
Gage, John Bailey, . . . . . *Kansas City, Mo.*

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|---|---|
| Getty, Carol, | Ellsworth. |
| Goldman, Heim, | Kansas City. |
| Gregg, Ernest, | Lawrence. |
| Griffin, Edith, | Lawrence. |
| Hart, Harry, | Beloit. |
| Harvey, John King, | Salina. |
| Harwi, Frank, | Atchison. |
| Havens, Helen, | Minneapolis. |
| Hawkinson, John, | McPherson. |
| Hayden, Mary Lorena, | Holton. |
| Heeney, Edwin Joseph, | Severance. |
| Hodgson, Blanche H., | Lawrence. |
| Houghton, Howard, | Beloit. |
| Humphrey, Karl E., | *El Reno, Okla.* |
| Jackson, Ruby, | Horton. |
| Johnson, Carlos, | Arkansas City. |
| Jones, Lucy Isabella, | Lawrence. |
| Kiser, Florence, | Clinton. |
| Klingberg, Frank Joseph, | Dillon. |
| Knight, Louise, | *Kansas City, Mo.* |
| Lander, Addie F., | Newton. |
| Lapham, Wilbur, | Chanute. |
| Lasley, Hallie, | Kansas City. |
| Lasley, Katherine, | Kansas City. |
| Linton, Elfrida, | Lawrence. |
| Marsh, Mabel, | Kinsley. |
| Marshall, Marjorie, | Lawrence. |
| Martin, Roy H., | *Kansas City, Mo.* |
| Mickey, Mary Emily, | Osage City. |
| Mitchell, Caroline, | Lawrence. |
| Monahan, Dora, | Armourdale. |
| Moore, Roy R., | Upland. |
| Moore, Samuel W., | Lawrence. |
| Mulvihill, Celia, | Perry. |
| McDaniel, Eugenie, | La Crosse. |
| McDonald, Lotta, | Norton. |
| McKnight, Grace Catherine, | Hiawatha. |
| Newlon, Olga, | Winfield. |
| Osmond, Margaret, | Great Bend. |
| Paulen, Blanche, | Fredonia. |
| Pearson, Clarence, | Enterprise. |
| Phillips, Birdie Ella, | Linwood. |
| Pickell, May, | Humboldt. |
| Potts, Nellie Brander, | Paola. |

| | |
|---|---|
| Powell, Milton Hamilton, | Hutchinson. |
| Pratt, Wallace, | Phillipsburg. |
| Quinn, John Alfred, | Garden City. |
| Ramsey, Chester Arthur, | Redfield. |
| Rankin, Alice Mary, | Lawrence. |
| Rhodes, Harry Herbert, | Wellington. |
| Richeson, Hazel May, | Lawrence. |
| Rocklund, Emily, | Lawrence. |
| Ross, Charles Evert, | Howard. |
| Ross, Richard A., | St. Marys. |
| Sellers, Alice Pearl, | Osawatomie. |
| Shanklin, Flora Marie, | Lawrence. |
| Shields, Florence, | Garnett. |
| Simpson, Henry, | Kansas City. |
| Smith, Anna C., | Lawrence. |
| Spilman, Minnie, | McPherson. |
| Stevens, Vera, | Lawrence. |
| Stevenson, Nellie May, | Lawrence. |
| Stickel, Zulu I., | Hiawatha. |
| Strawn, William B., | Columbus. |
| Swan, Clifford Howard, | Pittsburg. |
| Taylor, John W., | Edwardsville. |
| Tritt, Alfred Garfield, | Wellington. |
| Tyler, Frank Edwards, | Clifton. |
| Van Arsdale, Jonathan, | Lawrence. |
| Van Fleet, Charles L., | Lawrence. |
| Walker, Ethel, | Beloit. |
| Walters, Gertrude Merien, | Horton. |
| Warren, Luella, | Hutchinson. |
| Webb, Horton Emmett, | Howard. |
| Wellington, Waldo Forster, | Ellsworth. |
| Williams, Ada Lucile, | Newton. |
| Williams, Lillie Helena, | Lawrence. |
| Wilson, Christmas, | Iola. |
| Wolcott, Grace, | Lawrence. |
| Woodbury, Emma Blanche, | Lawrence. |
| Woodhead, Madge, | Emporia. |
| Woodward, Edward Homer, | Ellis. |
| Zurcher, Rose Frances, | Newton. |

Sophomores, 120.

## FRESHMEN.

| | |
|---|---|
| Adams, Maude, | Columbus. |
| Addison, Addie Elizabeth, | *Kansas City, Mo.* |
| Alford, Theodore Crandall, | Lawrence. |
| Allen, Annie, | Independence. |
| Anderson, Pansy B., | Kansas City. |
| Angney, Haughey, | Belle Plaine. |
| Angney, Urbin, | Belle Plaine. |
| Bailey, Beulah, | Lyndon. |
| Baker, Grace Darling, | Columbus. |
| Barber, Alice Louise, | *Aurora, Ill.* |
| Barnes, Edgar Rankin, | Blue Mound. |
| Barnett, Ruby, | Kansas City. |
| Barnhart, Marian Florence, | Kansas City. |
| Barrows, Raymond Albert, | Junction City. |
| Barteldes, Otto August, | Lawrence. |
| Beatty, Jerome Griswold, | Lawrence. |
| Beeson, Frank Edward, | Osawatomie. |
| Bigham, Alvin, | Topeka. |
| Bingler, Ola Luckey, | Lawrence. |
| Bischoff, Henry John, | Washington. |
| Black, John L., | Lawrence. |
| Blackmar, Winifred M., | Lawrence. |
| Blakey, Eleanor, | Pleasanton. |
| Bohannon, Bailey, | Lawrence. |
| Bond, Jay, | Lawrence. |
| Boynton, Charles Otis, | Kansas City. |
| Branch, Hazel Elizabeth, | Wichita. |
| Brawley, Mark Abnerthy, | Frankfort. |
| Brock, T. Gertrude, | *Excelsior Sp'gs, Mo.* |
| Brown, Edward K.,* | *El Reno, Okla.* |
| Brown, Guy Le Roy, | Sabetha. |
| Brownlee, Esther Elizabeth, | Lawrence. |
| Buckles, Mary Regene, | Hiawatha. |
| Buckner, Dean, | Topeka. |
| Bumgardner, Clara Marie, | Geuda Springs. |
| Burnham, Lucia, | Lawrence. |
| Bush, Fred Fernley, | Junction City. |
| Caldwell, Lorrin Linwood, | Hoisington. |
| Cambern, Fred Jessup, | Erie. |
| Campbell, Kenneth, | Clay Center. |
| Carpenter, Clara, | Lawrence. |

*Deceased.

| | |
|---|---|
| Chambers, Mabel, | Topeka. |
| Clark, Genevieve, | Leavenworth. |
| Clark, Lee Earnest, | Winchester. |
| Cobbs, Gertrude Ellen, | Horton. |
| Coffman, Celia Lenora, | Lawrence. |
| Cook, Robert Roy, | Clay Center. |
| Cooke, Sidney G., jr., | Leavenworth. |
| Corbet, M. Edna, | Topeka. |
| Cornelison, Robert Murrell, | Reserve. |
| Corwine, Edgar Glenn, | Mulvane. |
| Cory, Paul McPherson, | Parsons. |
| Cox, Roy Arminius, | Augusta. |
| Creswell, Alberta, | Lawrence. |
| Cunnick, Irene, | Lawrence. |
| Daum, Verna, | Centralia. |
| Davis, Harry W., | Osage City. |
| Davis, Philip, | Lawrence. |
| Dawson, Robert Earle, | *Kansas City, Mo.* |
| Dean, Imogene Curtiss, | Marion. |
| De Lapp, Verner Victor, | Cherokee, |
| Dolbee, Cora Emmett, | Lawrence. |
| Doubleday, Caroline, | Pittsburg. |
| Douglas, Roy, | Crestline. |
| Draper, James, | Oswego. |
| Duer, Guy Robert, | Nickerson. |
| Eaton, Hyden Jay, | Kansas City. |
| Edgerton, Oliver Paul, | Randolph. |
| Embree, Hattie A., | Topeka. |
| Emmett, Eveline, | Lawrence. |
| Evans, Edith, | Williamstown. |
| Eveland, Helen V., | *Kansas City, Mo.* |
| Fell, Nina Belle, | Concordia. |
| Foraker, Dora, | Wellington. |
| Forter, Cecil Alfred, | Marysville. |
| Foster, Frederick Bradford, | Carbondale. |
| Freeman, Harry R., | Plainville. |
| Fuller, Pearl, | Iola. |
| Funk, Neva, | Iola. |
| Galloway, Milton, | Wa Keeney. |
| Gillum, Mattie Anna, | Lawrence. |
| Gilmore, Edith, | *Salem, N. Y.* |
| Graves, Nellie Marjorie, | Beloit. |
| Gray, Frances Elizabeth, | Lawrence. |
| Green, Wendell, | Kansas City. |

| | |
|---|---|
| Greenlees, Agnes Mary, | Lawrence. |
| Griesa, William S., | Lawrence. |
| Gunn, William Rice, | Fort Scott. |
| Guthrie, Guy William, | Marysville. |
| Hall, Charles S., | Seneca. |
| Hardiman, Edward James, | Topeka. |
| Haskett, Iva, | Concordia. |
| Heeney, Georgette, | Severance. |
| Helwig, Bess, | Kansas City. |
| Henlen, Florence Camilla, | Herington. |
| Heuser, Chester Henry, | Fort Scott. |
| Hill, Ben Samuel, | Walnut. |
| Hill, Charles Henry, | Osawatomie. |
| Hoffman, Charley, | Elmo. |
| Holmes, Price, | Emporia. |
| Hopper, Frank R., | Lawrence. |
| Hovey, Wallace French, | Hiawatha. |
| Hunter, Harry, | Wellington. |
| Ice, E. Ellen, | Lawrence. |
| Ingleman, Anna A., | Lawrence. |
| Ingleman, Maud, | Lawrence. |
| Isaacson, Nellie, | Wetmore. |
| Ise, John Christopher, | Downs, |
| Jackson, Addie, | Horton. |
| Johnson, Ralph Charles, | Cottonwood Falls. |
| Jones, Hal, | Iola. |
| Jones, Owen C., | Everest. |
| Justice, Clair Lee, | Chanute. |
| Kalin, Oscar, | Clay Center. |
| Katherman, Maude Blanche, | Lawrence. |
| Kaul, Leonard, | Holton. |
| Kiefer, Norman, | Lawrence. |
| Kent, Mattie, | Lawrence. |
| Kinne, Elizabeth Pauline, | Moran. |
| Kohman, Henry Adolph, | Dillon. |
| Landon, Alfred M., | Independence. |
| Lane, Lanorah S., | Lawrence. |
| Laptad, Evadne, | Lawrence. |
| Lawless, Paul Henderson, | Winchester. |
| Lenig, Olive Amelia, | Lawrence. |
| Lindsay, Merrill, | Topeka. |
| Linton, Edgar Alison, | Lawrence. |
| Lowe, C. Olos, | Lawrence. |
| Lyon, Fred Masters, | Hillsdale. |

Maffet, Maud A., . . . . . Lawrence.
Maher, Mary R., . . . . . Kansas City.
Manley, Alma, . . . . . Junction City.
March, George M., . . . . . Lawrence.
Maris, Harry Boyd, . . . . . Stockton.
Maris, Mary Avis, . . . . . Cloverdale.
Markley, Lola Ethel, . . . . . Lawrence.
Marshall, Benjamin, . . . . . Lincoln.
Marshall, Wikoff, . . . . . Chase.
Marvin, Laura, . . . . . Fort Scott.
Miller, Edwin Henry, . . . . . Lawrence.
Miller, Howard P., . . . . . Perry.
Miller, Milton Bradford, . . . . . Osage City.
Miller, William Jesse, . . . . . Osage City.
Mitchell, Charles William, . . . . . Cherryvale.
Mitchum, Lillie, . . . . . Atchison.
Montgomery, Rose Clare, . . . . . Olathe.
Moodie, Hubert, . . . . . Lawrence.
Moodie, Leslie, . . . . . Lawrence.
Moody, Rebecca Elizabeth, . . . . . Lawrence.
Morgan, Edwin, . . . . . Clay Center.
Morton, Winifred, . . . . . Atchison.
Mosher, Guy, . . . . . Parsons.
Mossler, Sadie, . . . . . Lawrence.
Muckle, Grace, . . . . . Topeka.
Murray, Herbert Winfield, . . . . . Topeka.
McCarty, Virgil Warren, . . . . . La Harpe.
McCleverty, Adelbert Durkee, . . . . . Fort Scott.
McCreary, Miller, . . . . . Leavenworth.
McElfresh, Jessie Lee, . . . . . Osage City.
McElfresh, Myrtle Beatrice, . . . . . Osage City.
McGrath, George Edward, . . . . . Carbondale.
McKerahan, Henry H., . . . . . Lawrence.
McLean, Helen, . . . . . Topeka.
McNutt, Dora, . . . . . Eureka.
McNutt, Roy Chester, . . . . . Eureka.
McQuown, William I., . . . . . Walton.
Newby, Jonathan D., jr., . . . . . *Kansas City, Mo.*
Newton, Abbie, . . . . . Piper.
Norman, Jennie, . . . . . *Kansas City, Mo.*
Osborn, Walter Manning, . . . . . Waverly.
Pendleton, Claudia, . . . . . Lawrence.
Perkins, Clement Dudley, . . . . . Lawrence.
Perry, Flora, . . . . . Little River.

| | |
|---|---|
| Petit, Julian Cæsar, | Walnut. |
| Petit, William D., | Walnut. |
| Pfeifer, Herman, | Minneapolis. |
| Phenicie, Ruth Ethel, | Reno. |
| Phillips, William Sanford, | Linwood. |
| Pinney, Mary Edith, | Wilson. |
| Pollman, Hermena, | La Cygne. |
| Poos, John, | Potter. |
| Pyle, Capitola, | Haviland. |
| Rankin, Madonna Alice, | *Albuquerque, N. M.* |
| Rauch, Esther May, | Topeka. |
| Reynolds, Kate, | Clay Center. |
| Rhodes, Maude Olive, | Dodge City. |
| Rhodes, William Lemuel, | Argentine. |
| Richards, Aute, | Lawrence. |
| Richter, Alfred, | Kansas City. |
| Rinehart, Blanche Elvena, | Lawrence. |
| Roberts, Nellie R., | Lawrence. |
| Roberts, Roy Allison, | Lawrence. |
| Rogers, Elizabeth, | Chanute. |
| Rogers, Wilbur, | Ransom. |
| Root, Burton, | Lincoln. |
| Schloz, Katharina, | Argentine. |
| Schwinn, John Morton, | Wellington. |
| Scott, Anna Mae, | Arkansas City. |
| Scott, Winfield, | Girard. |
| Sears, Burton Peabody, | Lawrence. |
| Seaward, Lesta, | Sterling. |
| Shaffer, Susie Grace, | Hays. |
| Shearer, Nellie, | Lawrence. |
| Sheridan, Bernard Long, | Paola. |
| Siceloff, Guy David, | Belle Plaine. |
| Smith, Cecil, | Beloit. |
| Smith, Floyd, | Colby. |
| Smith, Hattie, | Colby. |
| Smith, Verni L. C., | Colby. |
| Spangler, Adolph James, | Lawrence. |
| Speck, Richard Theodore, | Kansas City. |
| Steele, Hattie, | Belvoir. |
| Sterling, Eugenia, | Lawrence. |
| Sterling, Scott, | Lawrence. |
| Stocks, Fred Loveland, | Blue Rapids. |
| Stockwell, Roy, | Nortonville. |
| Stone, Rosalie Rachel, | Walton. |

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|---|---|
| Strickland, Frank, | Kansas City. |
| Stuart, Geraldine, | Lawrence. |
| Swanson, Edward Peter, | Burrton. |
| Templin, Alice, | Lawrence. |
| Theis, Otto Palmer, | Ashland. |
| Thompson, Katherine Zelma, | Lawrence. |
| Thoms, John Orville, | Blue Mound. |
| Topham, Laura, | Lawrence. |
| Tusten, Elizabeth, | Lawrence. |
| Van Cleave, Thomas, | Kansas City. |
| Wall, Paul Jean, | Wichita. |
| Wallace, Cora Lee, | Topeka. |
| Wallace, May, | Lawrence. |
| Weldon, Ben B., | Stanley. |
| Whisenand, Grace Budd, | Wellington. |
| Wiedemann, Edward William, | Lawrence. |
| Wiggam, Augusta, | Emporia. |
| Wilcox, Winifred, | Concordia. |
| Wilder, Elizabeth Amy, | Lawrence. |
| Young, Carl, | Portland. |

Freshmen, 237.

## SPECIALS.

| | |
|---|---|
| Adams, Clyde, | Topeka. |
| Albaugh, Clarence J., | Kingman. |
| Albaugh, Mary Edna, | Kingman. |
| Allen, Emma Josephine, | Eudora. |
| Asher, Elsie Frances, | Fort Scott. |
| Atwood, James Holden, | Sibley. |
| Bartlett, Frank W., jr., | Kansas City. |
| Belt, George, | Pawnee Rock. |
| Biddinger, William Fletcher, | Howard. |
| Blair, Clyde McKitrick, | Lawrence. |
| Blatherwick, Edward W., | Argentine. |
| Bond, Rosa, | Lawrence. |
| Botsford, Anna Caroline, | Emporia. |
| Boyd, Nellie Fitzgerald, | Independence. |
| Bristol, Louise L., | Anthony. |
| Brook, John Porter, | Kansas City. |
| Brown, Chauncey G., | Wichita. |
| Brownlee, John, | Lawrence. |
| Carter, Eugene Lamar, | Lawrence. |
| Claflin, Oliver Q., | Kansas City. |
| Clark, Ansel Roscoe, | Independence. |
| Clark, Esther Mary, | Chanute. |

| | |
|---|---|
| Clarkson, William T., | Lawrence. |
| Clendening, Logan, | *Kansas City, Mo.* |
| Coffman, John Garfield, | Lawrence. |
| Coleman, Orla Loomis, | Oneida. |
| Coleman, R. V., | Oneida. |
| Commons, Clyde, | Devon. |
| Cureton, Thomas, | *Red Point, Mo.* |
| Dershem, Lincoln, | Baldwin. |
| Detrick, Erve O., | Erie. |
| Dial, Fred V., | Cleburne. |
| Dillard, Irene, | Fort Scott. |
| Duncan, Alice S., | *Kansas City, Mo.* |
| Earhart, Birdsey Allen, | Oxford. |
| Ellis, Ward, | Beloit. |
| Fisher, Thekla Adolphie, | Lyons. |
| Fox, Myrtle, | Lawrence. |
| Gant, Susanna, | Lawrence. |
| Gilmore, Charles M., | Lawrence. |
| Grant, Helen Janette, | Ellinwood. |
| Hoel, Jesse A., | Burden. |
| Hoover, Roy William, | Mahaska. |
| Jones, Bernice Elizabeth, | Cawker City. |
| Kirby, Genevieve, | Lawrence. |
| Knappenberger, Florence, | Jewell City. |
| Landrum, Claude Graham, | Lawrence. |
| Leonard, Maude H., | Lawrence. |
| Livers, Ada Elizabeth, | Ionia. |
| Long, Martin Luther, | Lawrence. |
| Lundquist, Luther Emanuel, | Lindsborg. |
| Luther, Winnifred, | Lawrence. |
| Macoubrie, William A., | Olathe. |
| Marks, Adele Elsie, | Lawrence. |
| Mayfield, William Madison, | Lansing. |
| Miles, Kate Belinda, | Waverly. |
| Miles, Omer J., | *Kansas City, Mo.* |
| Miller, Grace Clara, | Hill City. |
| Milton, Sidney McGarvey, | Lawrence. |
| Minor, Mary Emma, | *Kansas City, Mo.* |
| Mitchell, Ulysses Grant, | Lawrence. |
| Moody, Herschel, | Oneida. |
| Moore, Louis Howell, | Fort Scott. |
| Morin, Zerelda Sue, | Lawrence. |
| Murray, Joseph W., | Lawrence. |
| McBride, Hila C. L., | Severance. |

McCoy, Willa, . . . . . Osawatomie.
McElfresh, Elizabeth May, . . . . Osage City.
McLenon, Alexander, . . . . . Effingham.
McLenon, William, . . . . . Effingham.
McReynolds, Samuel A., . . . . . Lawrence.
McVey, Walter, . . . . . Independence.
Nesselrode, Clifford Calvin, . . . . Springhill.
Pierson, Day H., . . . . . Lawrence.
Poehler, Alma S., . . . . . Lawrence.
Porter, Alice, . . . . . Lawrence.
Porter, Olive, . . . . . Lawrence.
Powell, Charles D., . . . . . Wichita.
Powell, Leonard Bird, . . . . . Lawrence.
Qua, Ethel Jane, . . . . . *Cambridge, N. Y.*
Ray, Benjamin Franklin, . . . . . Lawrence.
Ray, Robert Jackson, . . . . . Sterling.
Rineley, Thomas D., . . . . . Beeler.
Russell, Charles Byron, . . . . . Lawrence.
Schneider, Carolyn Louise, . . . . Lawrence.
Sherman, Lulu Gertrude, . . . . . Lawrence.
Shields, Herbert Berzelious, . . . . Culver.
Shore, Butler, . . . . . Hutchinson.
Sinclair, Benjamin Franklin, . . . . Hooser.
Smith, John Elmer, . . . . . Winchester.
Stäps, Alfred E., . . . . . Lawrence.
Stewart, Jennie Isabelle, . . . . . Howard.
Sweezey, Edith, . . . . . Olivet.
Taylor, Raymond G., . . . . . Fort Scott.
Thomson, Jessie, . . . . . Emporia.
Tudor, Lena Bay, . . . . . St. John.
Virmond, Mary Elizabeth, . . . . Hays.
Ward, Nelson J., . . . . . Belleville.
Young, Dora Robb, . . . . . Ellsworth.
Young, John Silas, . . . . . Fort Scott.

Specials, 100.

## The School of Engineering.

### SENIORS.

| | |
|---|---|
| Barton, Ray, E. E., | Lawrence. |
| Bayless, Otis Alonzo, Min. E., | Lawrence. |
| Carney, James Howard, Min. E., | Baxter Springs. |
| Cooke, Chester, C. E., | Leavenworth. |
| Filkin, Roy Samuel, C. E., | Rosedale. |
| Hansen, George Troup, Min. E., | Logan. |
| Hoffman, Albert A., Min. E., | Parsons. |
| Hull, Blake, E. E., | Delphos. |
| Johnson, George DeForest, Min. E., | Lawrence. |
| Kepner, Wilford, Min. E., | Sabetha. |
| Kuchs, Oscar, Min. E., | Doniphan. |
| Linton, Thomas Edwin, C. E., | Lawrence. |
| Maxwell, Giles, E. E., | Morrill. |
| Mieth, Richard, C. E., | Lawrence. |
| Morrow, Charles E., E. E., | Topeka. |
| Nelson, Earle, C. E., | Leavenworth. |
| O'Neil, Joseph, C. E., | Leavenworth. |
| Pigg, Howard Fee, E. E., | Wichita. |
| Porter, Roland, C. E., | Idana. |
| Quiring, William A., E. E., | Newton. |
| Schoenau, Eric, E. E., | Tonganoxie. |
| Sherwood, Noble P., C. E., | Lawrence. |
| Tommasini, Antonio, E. E., | *Kansas City, Mo.* |
| Wilson, Hill P., jr., Min. E., | Lawrence. |
| Young, Alexander R., C. E., | Chanute. |

Seniors, 25.

### JUNIORS.

| | |
|---|---|
| Adams, Irwin D., E. E., | Caldwell. |
| Baldwin, G. Clyde, C. E., | *Kinsman, Ohio.* |
| Bedell, Frank G., Min. E., | Iola. |
| Benson, Nels C., E. E., | Lawrence. |
| Black, Ernest Bateman, C. E., | Meade. |
| Blanpied, Dolph, C. E., | Leavenworth. |
| Brett, Lawrence, Min. E., | Lawrence. |
| Butler, J. Wilson, E. E., | Ottawa. |
| Dunmire, Herbert, C. E., | Lawrence. |
| Gallup, Ralph Forney, C. E., | Blue Rapids. |
| Mann, Arthur R., C. E., | St. John. |

Martin, John B., Chem. E., . . . . Mound City.
McGillivray, Norman MacLeod, C. E., . Kansas City.
McLauthlin, Alden, E. E., . . . . *Denver, Colo.*
Neff, Paul J., Min. E., . . . . . *Kansas City, Mo.*
Neville, William, M. E., . . . . . Lawrence.
Parker, Glenn L., C. E., . . . . . Olathe.
Pirschell, William, Min. E., . . . . Holliday.
Plake, Frank, Min. E., . . . . . Chanute.
Seaver, Charles Homer, E. E., . . . Ellsworth.
Skofstad, Oscar James, C. E., . . . Lawrence.
Smith, Owen, E. E., . . . . . Independence.
Strickler, Thomas Johnson, C. E., . . . Topeka.
Taylor, Ray, Min. E., . . . . . Iola.
Veburg, Carl Amasa, E. E., . . . . Ottawa.
Ward, Walter, C. E., . . . . . Belleville.
Zimmerman, Oscar A., C. E., . . . . Olathe.

Juniors, 27.

## SOPHOMORES.

Adams, D. Stanley, E. E., . . . . *Kansas City, Mo.*
Amerman, Melvin R., C. E., . . . . Iola.
Ames, Loren, C. E., . . . . . Downs.
Anderson, Dan S., Min. E., . . . . Lawrence.
Bailey, Edgar Lawrence, E. E., . . . Lawrence.
Barnes, Luther, E. E., . . . . . Lawrence.
Biggs, Lawrence Julian, E. E., . . . Lawrence.
Bohn, Louis J., E. E., . . . . . Troy.
Brock, Frank Peterson, Min. E., . . . Girard.
Busch, Harry, C. E., . . . . . *Kansas City, Mo.*
Byrnes, Harry, C. E., . . . . . Belle Blaine.
Carruth, Frank D., C. E., . . . . . Topeka.
Cater, Don, Min. E., . . . . . Lawrence.
Coleman, Bond, E. E., . . . . . Mound City.
Cone, Victor, Min. E., . . . . . Lawrence.
Davidson, J. Harry, Chem. E., . . . Burlington.
Davies, Edwin P., C. E., . . . . . Fall River.
Forter, Samuel, C. E., . . . . . Marysville.
Fry, Vene, E. E., . . . . . Iola.
Hanna, Harry L., E. E., . . . . . Lawrence.
Heine, John Farnsworth, E. E., . . . Fort Scott.
Hixon, Arthur Warren, Min. E., . . . Hiawatha.
Hopkins, G. Jay, M. E., . . . . . Garnett.
Johnson, Herbert L., Chem. E., . . . Geneseo.
Kaler, John E., E. E., . . . . . Lynn.
Keller, John Elmer, E. E., . . . . Independence.

Klaumann, Charles, Min. E., . . . . Iola.
Lank, William John, M. E., . . . . La Crosse.
Longenecker, Albert M., Min. E., . . . Paola.
Mackenzie, George Pierce, E. E., . . . Kansas City.
Morgan, Carl, M. E., . . . . . De Soto.
Murray, Roy, C. E., . . . . . Olathe.
Myers, Ernest Lindley, C. E., . . . . Hutchinson.
McConoughy, David Charles, C. E., . . Atchison.
Nottingham, Avon R., M. E., . . . . Lawrence.
Purton, Astley, C. E., . . . . . Minneapolis.
Rea, Fred I., E. E., . . . . . Hiawatha.
Reid, Claude, E. E., . . . . . Morrill.
Rieman, Jonathan Burwell, C. E., . . . Hutchinson.
Schaak, Frank, C. E., . . . . . Kansas City.
Shuey, Paul F., E. E., . . . . . Emporia.
Sigler, Elmer, C. E., . . . . . Kansas City.
Sleeth, Earle, Min. E., . . . . . Lyndon.
Taylor, Ralph J., E. E., . . . . . Lawrence.
White, Edward A., M. E., . . . . Independence.

Sophomores, 45.

## FRESHMEN.

Ahlborn, George, E. E., . . . . . Smith Center.
Ahrens, Henry Denton, Min. E., . . . Paola.
Arnold, Wesley, C. E., . . . . . Kansas City.
Bacher, Elmer, E. E., . . . . . Clay Center.
Baldwin, Fred Rufus, Chem. E., . . . Kansas City.
Ballinger, Carl, C. E., . . . . . Burlington.
Barnard, John, C. E., . . . . . Osawatomie.
Blackmar, Frank H., Min. E., . . . . *Kansas City, Mo.*
Bliss, Tulla, C. E., . . . . . Oskaloosa.
Boardman, Floyd, C. E., . . . . . Arkansas City.
Boot, Cornelius William, E. E., . . . *Holland, Mich.*
Bozell, Harold Veatch, E. E., . . . . *Kansas City, Mo.*
Bramwell, Glenn H., E. E., . . . . Belleville.
Brentlinger, John, E. E., . . . . . Columbus.
Brigham, Clare, Min. E., . . . . . Belleville.
Broderson, Harry Peter, E. E., . . . Lyndon.
Brown, Andrew R., E. E., . . . . . Scammon.
Brown, J. Oscar, C. E., . . . . . Moran.
Burkholder, Joseph L., Chem. E., . . . Harper.
Calhoun, William Kenneth, C. E., . . Fort Scott.
Calkin, Bert H., C. E., . . . . . Herington.
Campbell, Earl, M. E., . . . . . Kansas City.

Chapin, Charles Walter, E. E., . . . Council Grove.
Christie, William Ernest, C. E., . . . Cedarvale.
Clossen, Roy Hugh, E. E., . . . . Coffeyville.
Cook, Arthur T., C. E., . . . . . Onaga.
Copley, Everett, E. E., . . . . . *Kansas City, Mo.*
Coston, Alfred Taylor, C. E., . . . . Fort Scott.
Courtney, Delos, C. E., . . . . . Lawrence.
Coventry, Neil Sherman, Min. E., . . . Fort Scott.
Crotinger, William, E. E., . . . . Bison.
Crummer, Fred, Min. E., . . . . . Belleville.
Curl, Vernon B., C. E. . . . . Phillipsburg.
Davis, Harry W., E. E., . . . . . Osage City.
De Geer, William Donald, E. E., . . . Coffeyville.
De Lapp, Verner, M. E., . . . . . Cherokee.
Dodge, Allan Wayne, Min. E., . . . Salina.
Donald, Prentiss Charles, C. E., . . . Moran.
Dove, Frank, C. E., . . . . . Chanute.
Drummond, Guy, E. E. . . . . *Darlington, Okla.*
Dudley, Chandler, C. E., . . . . . Independence.
Duncan, John, E. E., . . . . . Belleville.
Elder, Emil, Min. E., . . . . . Haviland.
Elledge, Harvey Gerald, Min. E., . . . McCune.
Ellis, Gwynne Wallace, C. E., . . . Pratt.
Forter, Cecil, C. E., . . . . . Marysville.
Frush, Don Wright, E. E., . . . . Kansas City.
Funk, Roy, Min. E., . . . . . Iola.
Gates, Everett Chester, C. E., . . . Cherryvale.
Gates, Virett Lester, C. E., . . . . Cherryvale.
Gelwix, Edmund, C. E., . . . . . Thayer.
Gowans, Harry, Min. E., . . . . . Lawrence.
Green, Herbert Post, Min. E., . . . *Kansas City, Mo.*
Greenfield, Benjamin, E. E., . . . . Price.
Groene, Merle Carlisle, E. E., . . . . Kansas City.
Guy, Frank Lauer, C. E., . . . . . Topeka.
Guy, Walter P., M. E., . . . . . Winfield.
Hackney, William, C. E., . . . . . Wellington.
Hale, Elson, Min. E., . . . . . La Crosse.
Hambleton, Thomas, E. E., . . . . Herington.
Hatashita, Cheoichiri, E. E., . . . . *Tahara, Japan.*
Henderson, William Simpson, C. E., . . Leavenworth.
Herman, Harry C., C. E., . . . . . Reserve.
Hess, Byron Young, C. E., . . . . Fredonia.
Hesser, Fred Reeder, C. E., . . . . Beloit.
Heter, Wylie, C. E., . . . . . Sterling.

Hicks, Will F., C. E., . . . . . Beloit.
Hillabrant, John W., C. E., . . . . . Washington.
Holben, Marvin, E. E., . . . . . Norcatur.
Horton, Clyde, E. E., . . . . . Sterling.
Huddleston, Early, C. E., . . . . . Lawrence.
Hunter, Homer, C. E., . . . . . Mitchell.
Johnson, Fred Rudolph, C. E., . . . Salina.
Katsuno, Sadahara, E. E., . . . . *Tokio, Japan.*
Kelley, Cecil, C. E., . . . . . Iola.
Kenny, William Dennison, E. E., . . . Scammon.
Kent, Robert, E. E., . . . . . Lawrence.
Knepp, William Henry, Min. E., . . . *Kansas City, Mo.*
Knowlton, William, E. E., . . . . Iola.
Lander, Albert, C. E., . . . . . Lawrence.
Lee, Benedict, C. E., . . . . . Hutchinson.
Lee, J. Herbert, E. E., . . . . . Ness City.
Linton, William M., C. E., . . . . Lawrence.
Luther, Herbert Lawrence, . . . . Lawrence.
Manning, Robert Guy, C. E., . . . . Gypsum.
Marshall, George Truesdell, E. E., . . Concordia.
Miller, Henry H., C. E., . . . . . Fort Scott.
Miller, Vanroy W., E. E., . . . . . Lawrence.
Montgomery, Cranston Parker, C. E., . . Coffeyville.
Murray, Herbert, E. E., . . . . . Topeka.
Myers, George Washington, C. E., . . . Newton.
McCoy, Curtis J., C. E., . . . . . Hiawatha.
McCoy, John William, C. E., . . . . Stafford.
McCune, Dale, C. E., . . . . . Leavenworth.
McGeorge, William Thomas, Chem. E., . Argentine.
McGrath, George E., C. E., . . . . Carbondale.
McShane, Jesse J., C. E., . . . . Gardner.
Neale, Justice M. B., C. E., . . . . Herington.
Newby, Elmer Paul, Min. E., . . . . Lawrence.
Noel, Elmer, C. E., . . . . . Pittsburg.
Norris, Robert Arthur, E. E., . . . . Burdett.
Oldroyd, Ralph, M. E., . . . . . Arkansas City.
Orr, Robert, E. E., . . . . . Winfield.
Palmer, Sidney La Verne, E. E., . . . Burdett.
Parker, Frank Everett, E. E., . . . . *Kansas City, Mo.*
Phillips, Frank, E. E., . . . . . Lawrence.
Phillips, Walter Benson, Min. E., . . . Gardner.
Pickell, Archie Benson, Min. E., . . . Humboldt.
Priest, Richard Newton, C. E., . . . Chanute.
Pulliam, Leonard, E. E., . . . . . Lyons.

Ramsey, Terrence Eugene, E. E., . . . Tonganoxie.
Rankin, Herbert William, Min. E., . . *Albuquerque. N. M.*
Reed, Howard Casper, E. E., . . . . Kansas City.
Relihan, Harry, C. E., . . . . . Smith Center.
Rhodes, William Lemuel, E. E., . . . Argentine.
Ridnour, Roy Everett, E. E., . . . . Emporia.
Robinson, Sylvester, C. E., . . . . Topeka.
Rose, Harry J., E. E., . . . . . Atchison.
Russell, Lloyd, C. E., . . . . . Lawrence.
Scheller, Carl, E. E., . . . . . Kansas City.
Scott, Donald M., C. E., . . . . . Belleville.
Servey, Dan Fulton, M. E., . . . . Iola.
Shuey, Ralph, Min. E., . . . . . Emporia.
Simpson, Roy Livingston, M. E., . . . Clay Center.
Sippy, Walter, E. E., . . . . . Belle Plaine.
Smith, Harris B., E. E., . . . . . Lawrence.
Smith, Henry Hume, E. E., . . . . Stockton.
Smith, I. U., C. E., . . . . . *Kansas City, Mo.*
Stanley, Lloyd Lawrence, Min. E., . . Lawrence.
Starkie, John L., Chem. E., . . . . *Kansas City, Mo.*
von Stein, Louis Raymond, E. E., . . Lawrence.
Stevens, Otto N., M. E., . . . . . Hutchinson.
Stewart, Ross R., E. E., . . . . . *Kansas City, Mo.*
Strode, Robert L., E. E., . . . . . Fort Scott.
Sweezey, Roy, E. E., . . . . . Olivet.
Thiele, Ernest, E. E., . . . . . Washington.
Thiele, William Fred, E. E., . . . . Hanover.
Thomas, Jay David, Min. E., . . . . Argentine.
Thorpe, Joel Rex, M. E., . . . . . Merriam.
Tourtellot, George Washington, C. E., . Kansas City.
Tredick, George Chester, E. E., . . . Kingman.
Tripp, Roy Gifford, C. E., . . . . Herington.
Trowbridge, Carl Boyd, Min. E. . . . Argentine.
Tucker, Ralph Josiah, C. E., . . . . Lyons.
Tufts, John Marshall, C. E., . . . . Atchison.
Vaughn, Wilton Arthur, C. E., . . . Marion.
Vaught, Joseph Cash, E. E., . . . . Coats.
Ward, Verl, E. E., . . . . . Lawrence.
Warren, Harry, C. E., . . . . . Pratt.
Weith, Archie James, Chem. E., . . . Iola.
Wellington, Earl J., E. E., . . . . Salina.
Wheeler, Charles M., E. E., . . . . Lawrence.
Whitney, Charles, M. E., . . . . . Girard.
Williamson, Arthur Vaughn, C. E., . . Pittsburg.

Winning, Robert K., E. E., . . . . *Kansas City, Mo.*
Wixson, Manley Joseph, C. E., . . . Vining.
Wolcott, Walter, E. E., . . . . . Lawrence.
Woodbury, Frank, E. E., . . . . . *Kansas City, Mo.*
Woodbury, Richard Lincoln, E. E., . . Lawrence.
Work, Tom Hay, Min. E., . . . . . Chanute.
Yale, Hugh, E. E., . . . . . Belleville.
Young, Benjamin Percy, E. E., . . . Kansas City.

Freshmen, 162.

## SPECIALS.

Adams, Ira James, E. E., . . . . . Perry.
Chapin, Karl, E. E., . . . . . Kansas City.
Chronister, Hubert D., E. E., . . . . Abilene.
Dillon, Nelly, C. E., . . . . . Eureka.
Dose, George, Chem. E., . . . . . *Kansas City, Mo.*
Erbacher, August Francis, C. E., . . . St. Marys.
Hine, Charles Robinson, Min. E., . . . Kinsley.
Ingram, William Conley, C. E., . . . Beloit.
Johnson, William Jacob, C. E., . . . Cleburne.
Kellogg, Joseph Mitchell, C. E., . . . Emporia.
Logan, Spencer R., Min. E., . . . . Cherryvale.
Loomis, Wesley Horace, Min. E., . . . *Chillicothe, Mo.*
Morse, Orlin Raymond, C. E., . . . . Mound City.
Nelson, Bernhard Richard, E. E., . . . Lawrence.
Nelson, Phillip Theodore, C. E., . . . Lindsborg.
Noyes, Edward N., C. E., . . . . . *St. Joseph, Mo.*
Perkins, David, M. E., . . . . . Lawrence.
Reese, William Johnson, Chem. E., . . Holton.
Renner, Edgar Ivan, M. E., . . . . Mound Valley.
Smethers, Albert Frederick, M. E., . . Eureka.
Sollars, Charles Samuel, E. E., . . . *Warrensburg, Mo.*
Wampler, Oliver, Min. E., . . . . *Webb City, Mo.*
Wheeler, Wilfred Forest, Min. E., . . . Argentine.
Williams, Kersey G., C. E., . . . . Kansas City.

Specials, 24.

## UNCLASSED.

Ainsworth, Samuel, . . . . . Lyons.
Asher, Arthur, . . . . . Fort Scott.
Bacon, John, . . . . . Emporia.
Bales, Frank, . . . . . Colby.
Banker, Julian, . . . . . Lawrence.
Best, Holland, . . . . . Columbus.
Bevington, Lewis, . . . . . Jewell City.
Brown, William Robert, . . . . . Junction City.

| | |
|---|---|
| Brownlee, Oscar, | Lawrence. |
| Burke, Paul, | Wichita. |
| Burns, Charles Arthur, | Carbondale. |
| Burt, Clarence Leslie, | Greensburg. |
| Butler, Arthur, | Lawrence. |
| Cayot, Claud E., | Garnett. |
| Coombs, Arthur B., | Osawatomie. |
| Cooper, William Bain, | Kansas City. |
| Copley, Josiah, | Lawrence. |
| Corp, Clifford, | Hutchinson. |
| Cortelyou, Frank Morgan, | Muscotah. |
| Davies, John, | Lebo. |
| Dodd, Firth Marion, | White Cloud. |
| Dougherty, James Wilfred, | Cawker City. |
| Drennan, Carl Mac, | Arkansas City. |
| Eyer, George Lenhart,* | Abilene. |
| Farnsworth, Howard Richards, | Atchison. |
| Feagles, Ralph Levi, | Buffalo. |
| Gordon, John Owen, | Stafford. |
| Green, Edgar Garrison, | Blue Mound. |
| Griffith, Richard Cordley, | Kansas City. |
| Hamilton, James Howard, | Clifton. |
| Hanna, Dallas, | Lawrence. |
| Harvey, Leslie J., | Salina. |
| Hicks, Van Trott, | Junction City. |
| Hudkins, Earl, | Cawker City. |
| Jontz, Harry, | Abilene. |
| Loughborough, William B., | Leavenworth. |
| Morrow, Cyrus, | Waterville. |
| McCarty, Virgil W., | La Harpe. |
| McClure, Harry Clifford, | Cawker City. |
| McClurg, John Guy, | Valley Falls. |
| Nicol, David, | Carbondale. |
| Pickrell, Don Elkin, | Ottawa. |
| Pugh, Edward Hill, | Independence. |
| Rash, Carlton Howard, | Salina. |
| Ross, Thomas Cornelius, | Olathe. |
| Rouse, Carl Everett, | Beloit. |
| Siceloff, G. David, | Belle Plaine. |
| Singleton, Rex B., | Benedict. |
| Sooy, Norman H., | *Kansas City, Mo.* |
| Speck, Harry Adam, | Lyons. |

*Deceased.

| | |
|---|---|
| Taber, Nathan Earl, | Burlingame. |
| Vansell, Ralph Sherman, | Muscotah. |
| Wangerien, Carl, | Vining. |
| Waring, Clarence, | Abilene. |
| Washburn, Ernest Andrew, | Downs. |
| Welsh, Charles Robert, | Clifton. |
| Wilder, William Jonas, | Salina. |
| Wright, Cecil, | White Cloud. |
| Young, Horace Leopold, | Girard. |

Unclassed, 59.

## The School of Law.

### SENIORS.

| | |
|---|---|
| Ackarman, Carl, | Sedan. |
| Asher, Henry, | Lawrence. |
| Bales, Arthur John, | Eudora. |
| Blue, Burdette, | Coffeyville. |
| Brady, James A., | Chetopa. |
| Butts, Rutherford Beecher Hays, | Mound Valley. |
| Carter, George S., | Marysville. |
| Claflin, Oliver Quincy, | Kansas City. |
| Cureton, Thomas H., | *Red Point, Mo.* |
| Fairchild, Abijah, | Burrton. |
| Fulton, Charley, | Hutchinson. |
| Garrard, Malcolm, | Topeka. |
| Gillette, Fred Asa, | *Anadarko, Okla.* |
| Givins, Roy James, | Salina. |
| Hicks, Albert, | Beloit. |
| Hughes, Judson, | Garnett. |
| Johnson, John, | Marysville. |
| Michaelson, Manley E., | Moline. |
| Miller, Harvey, | Fort Scott. |
| Morgan, David, | Garden City. |
| McCoy, Frank Alexander, | Sawyer. |
| Naill, John A., | Herington. |
| Patrick, Robert Burns, | Topeka. |
| Pees, Guy E., | Iola. |
| Pooler, Arthur, | Beloit. |
| Thompson, Richard H., | Horton. |
| Urbansky, Grover Cleveland, | St. Marys. |
| Van Natta, Henry, | Belleville. |
| Woodford, James W., | Burlington. |

Seniors, 29.

### MIDDLES.

| | |
|---|---|
| Benson, George J., | El Dorado. |
| Briley, Otto J., | Chanute. |
| Cook, Perry C., | Gove City. |
| Disney, Ernest, | Independence. |
| Driscoll, Jeremiah E., | Wilson. |
| Elder, William Henry, | Burrton. |
| Finkle, Ellsworth Weaver, | Galva. |
| Fleishman, John, | Topeka. |

| | |
|---|---|
| Ford, S. Clarence, | Garden City. |
| Heard, Walter L., | Arkansas City. |
| Jennings, Charles W., | Kansas City. |
| McCartney, Herbert M., | Neodesha. |
| McCarty, Wert G., | Emporia. |
| Parker, Wilbur, | Emporia. |
| Petry, Everett, | Independence. |
| Popham, Emerson, | Minneapolis. |
| Relihan, Arthur, | Smith Center. |
| Roberts, Clarence, | Lawrence. |
| Sedgwick, Fred, | Parsons. |
| Taylor, James S., | Lawrence. |
| Vaughn, Charles M., jr., | Marion. |
| Ward, Nelson J., | Belleville. |
| Wilson, Wallis D., | Horton. |

Middles,'23.

## JUNIORS.

| | |
|---|---|
| Adams, Clyde, | Topeka. |
| Atkinson, Clarence K., | Arkansas City. |
| Bailey, Clare A., | Mankato. |
| Blood, John Winter, | Toronto. |
| Bloss, Alva Lee, | Clay Center. |
| Breidenthal, Herbert, | Kansas City. |
| Brett, John Fred, | Iola. |
| Brookens, Elgie Clifford, | Harlan. |
| Brown, John William, | Neodesha. |
| Campbell, Newton, | Lawrence. |
| Child, Edward Malcolm, | Belvue. |
| Detrick, Erve Orion, | Erie. |
| Douglas, William, | Cherryvale. |
| Dunn, Fred J., | Garden City. |
| Guernsey, George Thacher, jr., | Independence. |
| Guthrie, Wade A., | Coffeyville. |
| Henley, Warren, | Lawrence. |
| Hetherington, Hale, | Atchison. |
| Hoel, Jesse Adrain, | Burden. |
| Isaacson, Arthur, | Wetmore. |
| Johnson, Nelson E., | Kansas City. |
| Kimball, Paul H., | Parsons. |
| Lebrecht, Hal R., | *Kansas City, Mo.* |
| Light, Everett E., | *Kansas City, Mo.* |
| Linder, Robert Nathaniel,* | Wathena. |
| Livingston, John Clarence, | Fort Scott. |

* Deceased.

| | |
|---|---|
| Luckey, William J., | Greenleaf. |
| Martin, Walter Scott, | Overbrook. |
| Mattingly, Roy, | Sedan. |
| Merrill, Frank J., | Paola. |
| Miles, Omer J., | Lawrence. |
| Montgomery, Peyton Augusta, | Coffeyville. |
| Montgomery, William, | Topeka. |
| Myers, Isaiah Stanley, | Fort Scott. |
| McCormick, Ross Clinton, | Phillipsburg. |
| McDonald, Walter Edward, | Kansas City. |
| McNaughton, Malcolm, | Tonganoxie. |
| McVey, Walter, | Independence. |
| Nevitt, Oak Dale, | Oxford. |
| Noel, William, | Peck. |
| O'Brien, Oscar Lawrence, | Independence. |
| Oliver, Robert J., | *Kansas City, Mo.* |
| Orr, George Glick, | Atchison. |
| Powell, Charles, | Wichita. |
| Read, Frank W., | Coffeyville. |
| Richardson, Jay H., | *St. Joseph, Mo.* |
| Sheedy, Dennis J., | Fredonia. |
| Smith, D. Glick, | Girard. |
| Smith, Solon, | Stockton. |
| Smith, Victor Armitage, | Pittsburg. |
| Souders, Clyde E., | Cheney. |
| Spencer, Clifton Allen, | Russell Springs. |
| Sutton, Joseph Henry, | Harris. |
| Taylor, Thomas Chalmers, | Lawrence. |
| Ward, Merle, | Wellington. |
| White, Jesse Ruskin, | Mankato. |
| Wildman, Roy Taylor, | Lawrence. |
| Worline, Robert Hite, | Peabody. |

Juniors, 58.

## SPECIALS.

| | |
|---|---|
| Chappell, Walter H., | Chanute. |
| Cleland, Sadie, | Lawrence. |
| Laing, Sam Lester, | Kansas City. |
| McCurdy, John J., | Lincoln. |
| McGinnis, Charles Edgar, | Elk City. |
| Perry, Frederick Francis, | Kiowa. |
| Pingry, C. Oscar, | Pittsburg. |
| Postlethwaite, Frank McClung, | Jewell City. |
| Royer, Jacob C., | Gove City. |

| | |
|---|---|
| **Sanders**, Harry, . . . . . | Burlington. |
| **Satterlee**, Bertrand, . . . . . | Rosedale. |
| **Stichter**, Charles, . . . . . | *Pleasant Hill, Ohio.* |
| **Swan**, Theodore Asa, . . . . . | Pittsburg. |
| **Winnagle**, Roscoe, . . . . . | *Warren, Ohio.* |

Specials, 14.

## The School of Pharmacy.

### SENIORS.

| | |
|---|---|
| Adams, Lindsey Kelly, | Chase. |
| Bernet, Ervin B., | Sabetha. |
| Chatelle, Rodney, | Lawrence. |
| Drisko, Judah, | Abilene. |
| Funchess, Clyde A., | Topeka. |
| Goyette, Omer, | Elsmore. |
| Lahr, Harry, | Sabetha. |
| Miller, Dale, | Topeka. |
| Sanford, Roy L., | Independence. |
| Trible, Wiltz B., | Independence. |
| West, Claude W., | Dodge City. |

Seniors, 11.

### JUNIORS.

| | |
|---|---|
| Birkett, Roy Lawrence, | Holton. |
| Burriss, Galen, | Burrton. |
| Callahan, Joseph, | Leavenworth. |
| Chapin, Frank Eugene, | Minneapolis. |
| Dennis, Warren, | Waterville. |
| DeVries, Henry J., | Hepler. |
| Eyth, Robert G. F., | Enterprise. |
| Garver, Clarabel, | Humboldt. |
| Hawkins, Roe, | St. John. |
| Hayden, Frank, | *Ponca City, Okla.* |
| Higgie, Will K., | Girard. |
| Hill, Glen, | Ottawa. |
| Hoss, Glen Arthur, | Ralston. |
| Ingalls, Maurice S., jr., | Halstead. |
| Joslyn, Frank King, | Cheney. |
| Kelly, Lulu, | Topeka. |
| Kobler, Will, | Hill City. |
| Makinson, William Omer, | Cedarville. |
| Myers, Earl, | Walton. |
| Niemann, William Hugo, | Lawrence. |
| Pence, Venarda, | *Richmond, Mo* |
| Riley, Roy Marland, | Wichita. |
| Shull, Charles B., | Hartford. |
| Smith, Frank Koepke, | Abilene. |
| Springer, Homer M., | Leavenworth. |

| | |
|---|---|
| Swann, Mamie, | Basehor. |
| Terrass, Jacob Fred, | Alma. |
| Thom, Clay, | Altoona. |
| Tillotson, Ava H., | Newton. |
| White, Guy, | Oswego. |
| Wilson, Seward Ellsworth, | Girard. |
| Yates, Ora, | Lawrence. |

Juniors, 32.

SOPHOMORES.

| | |
|---|---|
| Colvin, William P., | Lawrence. |
| McKeen, Walter Ernest, | Manhattan. |
| McKinley, Albert, | Greensburg. |
| Ratliff, Guy L., | Tonganoxie. |
| Teeter, Lawrence, | Lawrence. |

Sophomores, 5.

FRESHMEN.

| | |
|---|---|
| Bixby, Louis Edmund, | McPherson. |

Freshmen, 1.

SPECIALS.

| | |
|---|---|
| Bouldin, Roy Cleveland, | Longford. |
| French, Eben Russell, | Herndon. |
| Kinyon, Iris Jay, | Bern. |
| Morgan, Irwin W., | Augusta. |
| Walkenwitz, Charles Louis, | Leavenworth. |
| Wilson, George W., | Caney. |

Specials, 6.

## The School of Fine Arts.

The enrolment for the Summer Session is not included here, but may be found in the Summer School list, on another page.

### SENIORS.

| | |
|---|---|
| Hammond, Margaret De Veaux, | Hiawatha. |
| Moses, Grace Lorene, | Great Bend. |
| McElhinny, John Irwin Gregg, | Kansas City. |
| Owens, Minnie Luetta, | Lawrence. |
| Parks, Mary Keeling, | Ottawa. |
| Watson, Elsie, | Lawrence. |

Seniors, 6.

### JUNIORS.

| | |
|---|---|
| Clark, Carlotta, | Sharon Springs. |
| Maser, Pearl Bechtel, | Parsons. |
| McKoin, Mabel, | Olathe. |
| Sweeney, Anna Louis, | Lawrence. |
| Taylor, Alice Maude, | Lawrence. |
| Waters, Miriam Rose, | Bonner Springs. |

Juniors, 6.

### SOPHOMORES.

| | |
|---|---|
| Bauman, Helen, | Neodesha. |
| Bonar, Katherine, | Lawrence. |
| Chisham, Ruby, | Atchison. |
| Fitch, Louise, | Lawrence. |
| Frederickson, Rose A., | Lawrence. |
| Gray, Susie, | Pleasanton. |
| Hodgson, Charlotte M., | Lawrence. |
| McNaughton, Lucile, | Tonganoxie. |
| Parrish, Josephine, | Lawrence. |
| Perkins, Margaret Louise, | Lawrence. |
| Rose, Myrtle, | Ionia. |
| Smith, Alma Pearl, | Winchester. |

Sophomores, 12.

### FRESHMEN.

| | |
|---|---|
| Arbuthnot, Lulu, | Belleville. |
| Balsley, Helen, | Oskaloosa. |
| Branch, Hazel, | Wichita. |
| Briley, Estella M., | Chanute. |
| Butler, Eva Annette, | Lawrence. |
| Cowen, Queenie,* | Lawrence. |
| Dinsmoor, Frances, | Lawrence. |

*Deceased.

| | |
|---|---|
| Fitzpatrick, Jennie, | Lawrence. |
| Fluke, Bernice Estelle, | Lawrence. |
| Garrett, Mayme Adelaide, | Lawrence. |
| Garvin, Daisy D., | Lawrence. |
| Gebhart, Henrietta, | Phillipsburg. |
| Hart, Lucretia Wilson, | Hiawatha. |
| Henney, Elma Angie, | Hiawatha. |
| Houlton, Frances, | Garden City. |
| Ise, John C., | Downs. |
| Magoffin, Madge, | Lyons. |
| Maxson, Myrtle, | La Harpe. |
| McLaughlin, Myrtle V., | Bronson. |
| Miller, Grace La Vera, | El Dorado. |
| Millis, Nellie May, | Leavenworth. |
| Phelps, Pansy B., | *St. Joseph, Mo.* |
| Renshaw, Hazel Hardin, | *Enid, Okla.* |
| Rutherford, Fae, | Lawrence. |
| Sickly, Bertha Annie, | La Harpe. |
| Wedd, Pearl, | Springhill. |
| Zeman, Georgia, | Wilson. |

Freshmen, 27.

## SPECIALS.

| | |
|---|---|
| Alford, Sylvia, | Lawrence. |
| Bayless, Florence Banker, | Lawrence. |
| Bell, Mrs. Olin, | Lawrence. |
| Bitting, Mary, | Wichita. |
| Blackmar, Winifred M., | Lawrence. |
| Burrows, Zelta E., | Lawrence. |
| Carter, Ledrue, | Lawrence. |
| Cater, Ruth, | Lawrence. |
| Clevenger, Elda Babbett, | Lawrence. |
| Cone, Margaret, | Lawrence. |
| Cross, Inez Matilda, | Neodesha. |
| Dalton, Mrs. B. J., | Lawrence. |
| De Wert, Mae, | *Portland, Ore.* |
| Dickinson, Samuel Trig, | Lawrence. |
| Eames, Lola, | Lawrence. |
| Folks, Emma V., | Lawrence. |
| Gilson, Helen Louise, | Lawrence. |
| Griesa, Edna, | Lawrence. |
| Grignard, Madeleine, | *New York, N. Y.* |
| Hartman, Frank A., | Kansas City. |
| Henderson, Margaret, | Lawrence. |
| Herman, Harry, | Reserve. |

Hoad, Louise G., . . . . . Lawrence.
Hunzicker, Lena, . . . . . Lawrence.
Kilworth, Bertha Belle, . . . . . Lawrence.
Krehbiel, August, . . . . . Lawrence.
Lapham, J. Wilbur, . . . . . Chanute.
Leonard, Alice, . . . . . Lawrence.
Lindsay, Corinthia, . . . . . Lawrence.
Livers, Ada Elizabeth, . . . . . Ionia.
Marks, Adele, . . . . . Lawrence.
Mitchell, Hannah, . . . . . Lawrence.
Moore, Samuel W., . . . . . Lawrence.
Morin, Zerelda Sue, . . . . . Lawrence.
Myers, Martha F., . . . . . Lawrence.
McCoy, Willa, . . . . . Osawatomie.
McLaughlin, Leona, . . . . . Bronson.
Nungesser, Ella, . . . . . Parker.
Poehler, Alma S., . . . . . Lawrence.
Popham, Harold E., . . . . . Minneapolis.
Pryor, Erla, . . . . . Lawrence.
Robertson, W. Rees B., . . . . . Manchester.
Robinson, Wilma, . . . . . Lawrence.
Scherer, Linnius Wayne, . . . . . Newton.
Shippey, Harvey, . . . . . Woodbine.
Spray, Lester, . . . . . Lawrence.
Spray, Ruth, . . . . . Lawrence.
Stout, Blythe, . . . . . Lawrence.
Taggart, Gussie, . . . . . White City.
Uhrlaub, Agnes, . . . . . Lawrence.
Unthanks, Georgia, . . . . . Lawrence.
Viets, Nellie B., . . . . . Lawrence.
Ward, Eva, . . . . . Lawrence.
Wietzenkorn, Dora, . . . . . Lawrence.
Wilder, Sarah, . . . . . Hiawatha.
Wilhelmi, Alice, . . . . . Lawrence.
Williamson, Adah, . . . . . Holton.
Willis, Edith, . . . . . Lawrence.

Specials, 53.

## The School of Medicine.

SECOND YEAR.

| | |
|---|---|
| Alford, Joseph Savage, | Lawrence. |
| Bailey, William Hotchkiss, | Lawrence. |
| Francisco, Clarence Benjamin, | Lawrence. |
| Gephart, John, | Oskaloosa. |
| Gibson, Charles M., | Pittsburg. |
| Greene, Marie A., | Topeka. |
| Harvey, Clarence, | Salina. |
| Relihan, Frank, | Smith Center. |
| Sorgatz, Frank, | Beloit. |
| Tuthill, Herbert, | Salina. |
| Woodin, John, | Lawrence. |

Second year, 11.

FIRST YEAR.

| | |
|---|---|
| Albaugh, Clarence J., | Kingman. |
| Bailer, Lloyd, | Kansas City. |
| Chaney, Everett B., | Independence. |
| Cross, Roy, | Ellis. |
| Dial, Kate B., | Lawrence. |
| Duff, Walter Herbert, | *Kansas City, Mo.* |
| English, Carlos C., | Emporia. |
| Farquharson, Orville, | *Guthrie, Okla.* |
| Feild, Albert, | Paola. |
| Green, Wendell, | Kansas City. |
| Jacobs, Woodie, | Rosedale. |
| Miller, Henry B., | Rossville. |
| Morrow, Ernest, | Ashton. |
| Riney, Fred Harold, | Dodge City. |
| Robinson, David B., | Lawrence. |
| Sargent, John Gibson, | McPherson. |
| Sellers, Claude Lucullus, | Osawatomie. |
| Trekell, Emery, | Wellington. |
| Williams, John T., | *Frankfort, Ky.* |

First year, 19.

## The Summer Session.

Ackarman, Carl, *History*, . . . . Sedan.
Adams, James Homer, *Education*, . . Lawrence.
Agrelius, Frank U. G., *Chemistry*, . . Argentine.
Allen, Herman C., *Chemistry*, . . . McPherson.
Anderson, Carrie O., *Education*, . . . Morganville.
Arnold, Anna, *English*, . . . . . Cottonwood Falls.
Ashley, Mabel, *English*, . . . . . Lawrence.
Athay, Lena, *English*, . . . . . Kiowa.
Axtell, Lillian, *English*, . . . . . Newton.
Bailer, Lloyd E., *Chemistry*, . . . . *Kansas City, Mo.*
Bailey, William H., *Zoology*, . . . Lawrence.
Balling, Mollie, *English*, . . . . . *Kansas City, Mo.*
Barnes, Lydia, *Mathematics*, . . . Topeka.
Becker, Cora, *Education*, . . . . Lawrence.
Bennett, Martha, *Piano*, . . . . Lawrence.
Benson, Nels C., *Chemistry*, . . . . Lawrence.
Berger, Hedwig, *Zoology*, . . . . Kansas City.
Berry, Norris Hazel, *English*, . . . Blue Rapids.
Berry, Josephine, *Chemistry*, . . . Blue Rapids.
Biddinger, William Fletcher, *Mathematics*, Howard.
Bissett, Charles, *History*, . . . . Holton.
Bliss, Philemon, . . . . . Hiawatha.
Blood, John Winter, *Law*, . . . . Toronto.
Blue, Mary A., *Botany*, . . . . . Colby.
Bousfield, Midian O., *Chemistry*, . . Kansas City.
Bowen, Clara Elizabeth, *English*, . . Wichita.
Brewer, Ada, *English*, . . . . . Lawrence.
Brown, Waitman W., *Chemistry*, . . Lawrence.
Burrows, Montrose T., *Physics*, . . . Lawrence.
Carnahan, Blanche, *English*, . . . Topeka.
Carpenter, Chloe L., *History*, . . . Hutchinson.
Chambers, Mabel, *English*, . . . . Topeka.
Chambers, Nellie, *English*, . . . . Topeka.
Clark, Eva Gill, *Latin*, . . . . . Burlingame.
Clark, Josephine, *Piano*, . . . . Lawrence.
Clarke, Helen Maud, *English*, . . . Lawrence.
Clarke, Mary Patterson, *History*, . . Lawrence.
Cleland, Sadie, *Law*, . . . . . Lawrence.
Coffman, Mabel M., *English*, . . . Lawrence.
Coleman, Bond, *Chemistry*, . . . . Oneida.

Colman, Nellie, *Drawing*, . . . . Lawrence.
Cone, Margaret, *Piano*, . . . . . Lawrence.
Cooke, Chester, *Chemistry*, . . . . Lawrence.
Copley, Josiah, *Chemistry*, . . . . Lawrence.
Cureton, Thomas, *Spanish*, . . . . *Red Point, Mo.*
Cureton, Nellie King, *Spanish*, . . . *Red Point, Mo.*
Dillard, Mary J., *English*, . . . . Lawrence.
Dixon, Daisy, *Latin*, . . . . . Lawrence.
Dixon, Grace, *Harmony*, . . . . Lawrence.
Duerson, Fannie, *Rhetoric*, . . . . Hiawatha.
DeLapp, Verner, *Chemistry*, . . . . Cherokee.
Ellis, Ward, *Botany*, . . . . . Beloit.
Fitch, Louise, *Piano*, . . . . . Lawrence.
Flagg, Elizabeth G., *English*, . . . Kansas City.
Forter, Samuel A., *Mathematics*, . . Marysville.
Frederick, George C., *Chemistry*, . . Lawrence.
Freeman, Eli C., *French*, . . . . Manhattan.
Garrett, Clyda, *Piano*, . . . . Lawrence.
Gaskell, Harry B., *Zoology*, . . . . Lawrence.
Gentry, Eugene, *Latin*, . . . . . Wellington.
George, Alfred, *History*, . . . . Ottawa.
Gillette, Nina Dean, *French*, . . . Topeka.
Goddard, Brock, *History*, . . . . Leavenworth.
Greene, Charles, *Piano*, . . . . . Lawrence.
Griffin, Allen, *Piano*, . . . . . *Kansas City, Mo.*
Griffin, Margaret, *Piano*, . . . . *Kansas City, Mo.*
Gustafson, Carl F., *Geology*, . . . McPherson.
Hammitt, Frank M., *Mathematics*, . . Hiawatha.
Hart, Harry, *Chemistry*, . . . . Beloit.
Hartman, Frank, *Zoology*, . . . . Kansas City.
Hauser, Mary, *Piano*, . . . . . Lawrence.
Havens, Frances, *Piano*, . . . . *Kansas City, Mo.*
Hawkinson, John, *Drawing*, . . . McPherson.
Hayes, Lucile Heloise, *Education, Chemistry*, Lawrence.
Hayward, Grace, *History*, . . . . Lawrence.
Hess, John A., *Chemistry*, . . . . Halstead.
Hoar, Ethel Marie, *History*, . . . . Lawrence.
Hodgson, Charlotte, *Piano*, . . . . Lawrence.
Hooper, Thomas H., *Geology*, . . . Smith Center.
Hosford, Nadine, *English*, . . . . Lawrence.
Hoskins, Roy, *Zoology*, . . . . . Lawrence.
Houdyshel, Cecil E., *Zoology*, . . . Lawrence.
Hughes, Judson J., *Law*, . . . . . Garnett.
Iles, Victor, *History*, . . . . . Lawrence.

Ise, Charles D., *Geology*, . . . . Downs.
Jackson, Addie, *Physical Education*, . Lawrence.
Jackson, Robert, *Piano*, . . . . . *Kansas City, Mo.*
Jacoby, Clark E., *History*, . . . . Iola.
Johnston, Ida, *English*, . . . . . Hutchinson.
Judy, J. Scott, *English*, . . . . . Garnett.
Kent, Josephine, *Chemistry*, . . . . Lawrence.
Kent, Mattie, *Chemistry*, . . . . Lawrence.
Kentwig, Mary, *Piano*, . . . . . *Kansas City, Mo.*
Keplinger, Fred, *Chemistry*, . . . . Tecumseh.
Kidder, Marion, *English*, . . . . Lawrence.
Kile, Harry L., *Spanish*, . . . . . Canton.
Knott, Joseph, *History*, . . . . . Yates Center.
Koch, Edwin O., *Chemistry*, . . . . Kansas City.
Kube, Herman, *Law*, . . . . . *Kansas City, Mo.*
Lahr, Harry, *Chemistry*, . . . . Sabetha.
Laird, Paul E., *Physics*, . . . . . Argentine.
Landis, May, *Zoology*, . . . . . Lawrence.
Landrum, Claude G., *German*, . . . Lawrence.
Landrum, Charles H., *Zoology*, . . . Lawrence.
Lane, Lanorah S., *German, Chemistry*, . Lawrence.
Lane, Oscar Jasper, *English*, . . . Lawrence.
Lasley, Hallie, *Chemistry*, . . . . Kansas City.
Lasley, Katherine, *Chemistry*, . . . Kansas City.
Lauterbach, Martha Augusta, *Education*, Colby.
Lindner, Ethel F., *Education*, . . . Lawrence.
Linton, Thomas E., *Chemistry*, . . . Lawrence.
Lofty, John, *Botany*, . . . . . Salina.
Long, Ethel Mae, *French*, . . . . Lawrence.
Loughborough, William B., *Mathematics*, . Leavenworth.
Luby, William A., *Zoology*, . . . . *Kansas City, Mo.*
Luther, Winnifred, *English*, . . . . Lawrence.
Manley, Nettie E., *English*, . . . . Junction City.
Manning, Alba Roy, *Education*, . . . Gypsum.
Mathes, Cora Anice, *Latin*, . . . . Nickerson.
Melvin, Frank E., *History*, . . . . Iola.
Metcalf, George Leslie, *Zoology*, . . . Wellington.
Miller, Lena Vivian, *English*, . . . Lawrence.
Morton, Gertrude Susan, *English*, . . Topeka.
Murphy, Ethel L., *French*, . . . . Edwardsville.
Myers, Guila C., *History*, . . . . Lawrence.
McCauley, May, *Piano*, . . . . . *Kansas City, Mo.*
McCormick, Ross C., *Law*, . . . . Phillipsburg.
McGinnis, Charles Edgar, *Law*, . . . Lawrence.

McProud, Bertha, *German*, . . . . Baldwin.
Neville, William, *Chemistry*, . . . . Lawrence.
Newby, Frances, *Piano*, . . . . . *Kansas City, Mo.*
Newman, Mildred, *Education*, . . . Kansas City.
Norris, Sidney A., *Chemistry*, . . . Holton.
Nowlin, Nadine, *Geology*, . . . . Hiawatha.
Oman, Clinton Howard, *Chemistry*, . . Garnett.
Pampel, Carrie, *Piano*, . . . . . *Kansas City, Mo.*
Parmalee, Emma, *Piano*, . . . . *Kansas City, Mo.*
Pattison, John W., *English*, . . . . *Cincinnati, Ohio.*
Peace, Larry M., *Zoology*, . . . . Lawrence.
Peacock, Juanita Mildred, *Education*, . Atchison.
Pearson, Clarence, *German*, . . . . Lawrence.
Pendleton, Helen, *Piano*, . . . . Lawrence.
Pennington, Celia Emily, *English*, . . Lawrence.
Phillips, Frank D., *German*, . . . . Lawrence.
Pitcher, Arthur D., *Chemistry*, . . . Havensville.
Poehler, Alma, *Piano*, . . . . . Lawrence.
Powell, Milton H., *Zoology*, . . . . Hutchinson.
Rambo, Josie, *Chemistry*, . . . . Lawrence.
Rea, Fred, *Physics*, . . . . . Hiawatha.
Reynolds, Jessie A., *Spanish*, . . . Manhattan.
Richert, David Henry, *Chemistry*, . . Goessel.
Riley, Carl E., *Botany*, . . . . . Paola.
Roberts, Bertha, *Physics*, . . . . Lawrence.
Roberts, Beulah S., *German*, . . . Lawrence.
Robinson, Kate, *Piano*, . . . . . *Kansas City, Mo.*
Robinson, Wilma, *Piano*, . . . . Lawrence.
Rohrer, Christian A., *Chemistry*, . . Kansas City.
Russell, Lloyd E., *Mathematics*, . . . Lawrence.
Sautter, Clarbourne H., *Drawing*, . . Horton.
Shane, Myrtle O., *English*, . . . . Lawrence.
Shideler, John Whittier, *Geology*, . . McCune.
Shirk, Claude J., *Zoology*, . . . . McPherson.
Shirk, James A. G., *Chemistry*, . . . McPherson.
Smith, Delbert O., *Botany*, . . . . Minneapolis.
Smith, Harris B., *Mathematics*, . . . Lawrence.
Smothers, Trussie, *Education, History*, . Lawrence.
Spray, Ruth, *Piano*, . . . . . Lawrence.
Stanton, Evelyn, *Drawing*, . . . . Lawrence.
Stelter, Benjamin F., *English*, . . . Lawrence.
Stevens, Vera E., *Zoology*, . . . . Lawrence.
Stewart, Blanche, *English*, . . . . Topeka.
Stimpson, Edwin Fiske, *Physics*, . . . Lawrence.

Stone, Sadie, *English*, . . . . . Lawrence.
Strawn, William B., *Botany*, . . . . Columbus.
Street, Hortense, *Drawing*, . . . . Lawrence.
Stuart, Stella K., *History*, . . . . Lawrence.
Sweeney, Anna, *Piano*, . . . . . Lawrence.
Taylor, Cora A., *Botany*, . . . . . Lawrence.
Thompson, Martha, *German*, . . . . Kansas City.
Topham, Laura J., *German*, . . . . Lawrence.
Tredick, George Chester, *Chemistry*, . . Kingman.
Turner, Alice N., *English*, . . . . Newton.
Urbansky, Grover Cleveland, *Law*, . . St. Marys.
Uhrlaub, Agnes, *Piano*, . . . . . Lawrence.
Watson, Rachel H., *French*, . . . Lawrence.
Weatherby, Leroy S., *Chemistry*, . . Lawrence.
Wheeler, Wilfred F., *Chemistry*, . . . Argentine.
Wiedemann, Edward William, *German*, . Lawrence.
Wierenga, Charles, *Zoology*, . . . . Cawker City.
Wierenga, Henry A., *German*, . . . Cawker City.
Winning, Robert K., *Chemistry*, . . . Lawrence.
Wolcott, Walter, *French*, . . . . Lawrence.
Woodin, Clara, *Zoology*, . . . . Lawrence.
Yates, James Alexander, *Geology*, . . Lawrence.
Yates, Ora, *Chemistry*, . . . . . Lawrence.
Young, Alice Leona, *Education*, . . . Salina.

Summer session, 195.

# Summary of Enrolment.

## 1904–'05.

| Departments. | *Men.* | *Women.* | *Total.* |
|---|---|---|---|
| **The Graduate School** | **41** | **37** | **78** |
| **The College of Liberal Arts and Sciences** | **320** | **353** | **673** |
| Senior Class | 39 | 74 | 113 |
| Junior Class | 41 | 62 | 103 |
| Sophomore Class | 52 | 68 | 120 |
| Freshman Class | 128 | 109 | 237 |
| Special Students | 60 | 40 | 100 |
| **The School of Engineering** | **341** | **1** | **342** |
| Senior Class | 25 | ..... | 25 |
| Junior Class | 27 | ..... | 27 |
| Sophomore Class | 45 | ..... | 45 |
| Freshman Class | 162 | ..... | 162 |
| Special Students | 23 | 1 | 24 |
| Unclassified | 59 | ..... | 59 |
| **The School of Law** | **123** | **1** | **124** |
| Senior Class | 29 | 1 | 30 |
| Middle Class | 23 | ..... | 23 |
| Junior Class | 58 | ..... | 58 |
| Special Students | 13 | ..... | 13 |
| **The School of Fine Arts** | **13** | **96** | **109** |
| Senior Class | 1 | 5 | 6 |
| Junior Class | ..... | 6 | 6 |
| Sophomore Class | ..... | 12 | 12 |
| Freshman Class | 1 | 26 | 27 |
| Special Students | 11 | 47 | 58 |
| **The School of Pharmacy** | **59** | **5** | **55** |
| Senior Class | 11 | ..... | 11 |
| Junior Class | 27 | 5 | 32 |
| Sophomore Class | 5 | ..... | 5 |
| Freshman Class | 1 | ..... | 1 |
| Special Students | 6 | ..... | 6 |
| **The School of Medicine** | **28** | **2** | **30** |
| Second Year | 10 | 1 | 11 |
| First Year | 18 | 1 | 19 |
| **The Summer Session** | **95** | **100** | **195** |
| Graduate Students | 16 | 17 | 33 |
| Undergraduate Students | 79 | 83 | 162 |
| Total enrolment in all the schools | 1,011 | 595 | 1,606 |
| Names counted twice | 99 | 61 | 160 |
| **Total registration, 1904-'05** | **912** | **534** | **1,446** |

| | |
|---|---|
| **Kansas students** | **1,370** |
| **Students from other states** | **76** |

## Classification of Students.

### By Kansas Counties.

| | | | | | |
|---|---|---|---|---|---|
| Allen | 33 | Gove | 2 | Osage | 20 |
| Anderson | 6 | Graham | 3 | Osborne | 4 |
| Atchison | 17 | Greenwood | 7 | Ottawa | 15 |
| Barber | 2 | Harper | 3 | Pawnee | 2 |
| Barton | 5 | Harvey | 17 | Phillips | 7 |
| Bourbon | 30 | Jackson | 9 | Pottawatomie | 8 |
| Brown | 33 | Jefferson | 22 | Pratt | 5 |
| Butler | 5 | Jewell | 8 | Rawlins | 2 |
| Chase | 3 | Johnson | 18 | Reno | 15 |
| Chautauqua | 6 | Kingman | 3 | Republic | 10 |
| Clay | 15 | Kiowa | 4 | Rice | 20 |
| Cloud | 4 | Labette | 11 | Riley | 7 |
| Crawford | 23 | Leavenworth | 30 | Rooks | 4 |
| Cherokee | 13 | Lincoln | 3 | Rush | 5 |
| Coffey | 8 | Linn | 16 | Saline | 15 |
| Cowley | 14 | Logan | 1 | Sedgwick | 17 |
| Decatur | 2 | Lyon | 15 | Seward | 1 |
| Dickinson | 19 | Marion | 5 | Shawnee | 40 |
| Doniphan | 12 | Marshall | 16 | Smith | 7 |
| Douglas* | 413 | McPherson | 15 | Stafford | 5 |
| Edwards | 1 | Meade | 1 | Sumner | 31 |
| Elk | 7 | Miami | 20 | Thomas | 5 |
| Ellis | 6 | Mitchell | 19 | Trego | 2 |
| Ellsworth | 8 | Montgomery | 32 | Wabaunsee | 1 |
| Finney | 6 | Morris | 1 | Wallace | 1 |
| Ford | 3 | Neosho | 16 | Washington | 8 |
| Franklin | 11 | Nemaha | 14 | Wilson | 9 |
| Gray | 1 | Ness | 3 | Woodson | 3 |
| Geary | 6 | Norton | 2 | Wyandotte | 73 |

*A large number of students whose names appear in this catalogue as residents of Douglas county are so catalogued because they temporarily reside in Lawrence for the purpose of attending the University.

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### Classification by States.

| | | | |
|---|---|---|---|
| Colorado | 1 | New York | 3 |
| Illinois | 1 | Ohio | 3 |
| Japan | 2 | Oklahoma Territory | 9 |
| Kansas | 1,370 | Oregon | 1 |
| Kentucky | 1 | Virginia | 1 |
| Missouri | 50 | | |
| Nebraska | 1 | Total | 1,446 |
| New Mexico | 3 | | |

# Officers of Alumni Associations.

### The College of Liberal Arts and Sciences, 1904-'05.

| | |
|---|---|
| Frank P. Mac Lennan, '75, | *President.* |
| Lulu Renn, '01, | *Vice-president.* |
| Kate Riggs, '94, | *Recording Secretary.* |
| Elmer F. Engel, '92, | *Corresponding Secretary.* |
| George O. Foster, '01, | *Treasurer.* |
| Olin Templin, '86, Wilson Steeling, '83, Mrs. L. H. Perkins, '77, Rose Morgan, '94, Charles F. Scott, '81, | *Executive Committee.* |

### The School of Law, 1904-'05.

| | |
|---|---|
| James A. Orr, '94, | *President.* |
| James H. Mitchell, '93, | *Secretary and Treasurer.* |

### The School of Pharmacy, 1904-'05.

| | |
|---|---|
| Daniel H. Spencer, '97, | *President.* |
| Julian Jenkinson, '04, | *Vice-president.* |
| Ina L. Spencer, '03, | *Recording Secretary.* |
| Robert H. Needham, '04, | *Corresponding Secretary.* |
| Harry L. Raymond, '86, | *Treasurer.* |

## Acknowledgments.

**Gifts to the Library, March, 1904, to March, 1905.**

| | *Vols.* |
|---|---|
| American Bar Association | 1 |
| Ashton, Prof. C. H., Lawrence | 1 |
| Blackmar, Prof. F. W., Lawrence | 10 |
| Brown, Edward Arnold, Kansas City, Mo. | 550 |
| Canfield, Miss Dorothea Frances, New York city | 1 |
| Case, Judge Nelson, Oswego | 1 |
| Clark, Dr. A. W., Lawrence | 1 |
| Doughty, Hon. A. G., Ottawa, Canada | 20 |
| Gardiner, Mrs. Charles, Emporia | 116 |
| Gregg, Rev. R., Ottawa | 1 |
| Hodder, Prof. F. H., Lawrence | 3 |
| Hoss, Prof. George W., Wichita | 1 |
| Howland, Mrs. M. B., Lawrence | 4 |
| Illinois Bureau of Labor, Springfield | 1 |
| Iowa Geological Survey, Des Moines | 1 |
| Kansas Secretary of State, Topeka | 2 |
| Kansas State Historical Society, Topeka | 1 |
| Kansas Superintendent of Insurance, Topeka | 1 |
| Kappa Alpha Theta Fraternity, Lawrence | 15 |
| Kay, Prof. G. F., Lawrence | 7 |
| Merrill, Miss Katherine, Abilene | 7 |
| Modern Woodmen of America, Rock Island, Ill. | 1 |
| New Jersey State Geologist, Trenton | 1 |
| New Jersey State Librarian, Trenton | 1 |
| New York State Historian, Albany | 1 |
| Ohio Geological Survey, Columbus | 1 |
| Olin, Prof. A. S., Lawrence | 9 |
| Peabody Institute, Baltimore | 1 |
| Pugh, B. H., Topeka | 1 |
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### NEWSPAPERS AND PERIODICALS.

Given by the publishers, unless otherwise indicated.

#### DAILIES.

| | |
|---|---|
| Coffeyville Daily Journal | Coffeyville. |
| Emporia Gazette | Emporia. |
| Daily Republican | Fort Scott. |
| Fort Scott Daily Tribune and Monitor | Fort Scott. |
| Hutchinson News | Hutchinson. |

Iola Daily Register..... Iola.
Kansas City Journal..... Kansas City.
Kansas City World..... Kansas City.
Lawrence Daily Gazette..... Lawrence.
Lawrence Daily Journal..... Lawrence.
Lawrence Daily World..... Lawrence.
McPherson Daily Republican..... McPherson.
Newton Evening Kansan-Republican..... Newton.
Parsons Sun..... Parsons.
Salina Evening Journal..... Salina.
Topeka Capital..... Topeka.
Topeka Daily Herald..... Topeka.
Topeka State Journal..... Topeka.

WEEKLY NEWSPAPERS AND PERIODICALS.

Abilene Democrat..... Abilene.
Abilene Weekly Chronicle..... Abilene.
Abilene Weekly Reflector..... Abilene.
Advocate Democrat..... Marysville.
Alma Enterprise..... Alma.
Altamont Journal..... Altamont.
Anthony Republican..... Anthony.
Atchison Weekly Globe..... Atchison.
Barton County Democrat..... Great Bend.
Baxter Springs News..... Baxter Springs.
Barber County Index..... Medicine Lodge.
Belleville Freeman..... Belleville.
Belleville Telescope..... Belleville.
Beloit Gazette..... Beloit.
Beloit Times..... Beloit.
Better Way..... Minneapolis.
Blue Mound Sun..... Blue Mound.
Breeders' Gazette..... Chicago, Ill.
Bison Bee..... Bison.
Brown County World..... Hiawatha.
Burlington Independent..... Burlington.
Burlington Republican..... Burlington.
Caney Chronicle..... Caney.
Central Kansas Democrat..... Lyons.
Centerville Courier..... Centerville.
Chapman Advertiser..... Chapman.
Chase Register..... Chase.
Chase County Leader..... Cottonwood Falls.
Christian Register..... Boston, Mass.
Clark County Clipper..... Ashland.
Clay Center Dispatch..... Clay Center.
Clay Center Times..... Clay Center.
Coffeyville Record..... Coffeyville.
Columbus Advocate..... Columbus.
Commoner..... Lincoln, Neb.
Conway Springs Star..... Conway Springs.
Council Grove Republican..... Council Grove.
Comet..... Courtland.
De Soto Eagle Eye..... De Soto.
Dickinson County News..... Abilene.

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|---|---|
| El Dorado Republican | El Dorado. |
| Ellsworth Messenger | Ellsworth. |
| Emporia Republican | Emporia. |
| Eudora News | Eudora. |
| Eureka Herald | Eureka. |
| Fairview Enterprise | Fairview. |
| Fredonia Herald | Fredonia. |
| Fort Leavenworth News | Fort Leavenworth. |
| Galena Republican | Galena. |
| Garnett Journal | Garnett. |
| Glasco Sun | Glasco. |
| Globe | Meade. |
| Grant County Republican | Ulysses. |
| Grand Rapids Times | Grand Rapids. |
| Great Bend Register | Great Bend. |
| Herald of Gospel Liberty | Dayton, Ohio. |
| Holton Recorder | Holton. |
| Holton Signal | Holton. |
| Howard Courant | Howard. |
| Humboldt Herald (semiweekly) | Humboldt. |
| Illustrated London News (Mrs. T. H. Chalkley, Lawrence), | New York. |
| Independent | Wa Keeney. |
| Independent News | Girard. |
| Irving Leader | Irving. |
| Jetmore Republican | Jetmore. |
| Kansas Agitator | Garnett. |
| Kansas American | McPherson. |
| Kansas Democrat | Hiawatha. |
| Kansas Farmer | Topeka. |
| Kansas Standard | La Cygne. |
| Kansas Star | Olathe. |
| Kingman Journal | Kingman. |
| Kiowa News-Review | Kiowa. |
| La Cygne Weekly Journal | La Cygne. |
| Larned Weekly Chronoscope | Larned. |
| Lawrence Germania | Lawrence. |
| Lindsborg News | Lindsborg. |
| Linn County Republic | Mound City. |
| Live Stock Farmer | Dodge City. |
| Logan Republican | Logan. |
| Long Island Leader | Long Island. |
| Lyons Republican | Lyons. |
| Lyndon Record | Lyndon. |
| Manhattan Mercury | Manhattan. |
| Manhattan Nationalist (triweekly) | Manhattan. |
| Marion Record | Marion. |
| Marshall County News | Marysville. |
| Messenger | Smith Center. |
| Miami Republican | Paola. |
| Minneapolis Messenger | Minneapolis. |
| Monitor Press | Wellington. |
| Mound Valley Herald | Mound Valley. |
| Neodesha Register | Neodesha. |
| Ness County News | Ness City. |
| New Era | Formosa. |

| | |
|---|---|
| New Voice | Chicago, Ill. |
| Norton Courier | Norton. |
| Olathe Mirror | Olathe. |
| Osage City Free Press | Osage City. |
| Osawatomie Graphic | Osawatomie. |
| Osborne County Farmer | Osborne. |
| Ottawa Independent | Ottawa. |
| Ottawa Weekly Herald | Ottawa. |
| Paola Times | Paola. |
| People's Voice | Wellington. |
| Phillipsburg Herald | Phillipsburg. |
| Plainville Times | Plainville. |
| Pleasanton Observer | Pleasanton. |
| Pratt Union | Pratt. |
| Public (Mr. E. E. Soderstrom, Emporia) | Chicago, Ill. |
| Public Opinion | Osage City. |
| Record | Russell. |
| Republic City News | Republic City. |
| Republican | Hays City. |
| Republican Record | Erie. |
| Rice County Eagle | Lyons. |
| Robinson Index | Robinson. |
| Rooks County Record | Stockton. |
| Rush Center Breeze | Rush Center. |
| Sabetha Star | Sabetha. |
| Smith County Journal | Smith Center. |
| Sterling Kansas Bulletin | Sterling. |
| St. Marys Journal | St. Marys. |
| St. Paul Journal | St. Paul. |
| Salina Weekly Journal, | Salina. |
| Seneca Courier-Democrat | Seneca. |
| Seneca Tribune | Seneca. |
| South Kansas Tribune | Independence. |
| Star and Kansan | Independence. |
| Torch of Liberty | Mound City. |
| United Presbyterian | Pittsburg, Pa. |
| University Record | Chicago Ill. |
| Uniontown News | Uniontown. |
| Wamego Times | Wamego. |
| Washington Register | Washington. |
| Washington Republican | Washington. |
| Waterville Telegraph | Waterville. |
| Wathena Times | Wathena. |
| Wathena Weekly Republican | Wathena. |
| Weekly Kansas Chief | Troy. |
| Weekly Review | Frankfort. |
| Weekly Sentinel | Tonganoxie. |
| Western Call | Beloit. |
| Western Life | Leavenworth. |
| Western Times | Shannon. |
| Westland Home | Anthony. |
| Westmoreland Recorder | Westmoreland. |
| Westmoreland Signal | Westmoreland. |
| Wichita Eagle | Wichita. |
| Williamsburg Star | Williamsburg. |

| | |
|---|---|
| Winfield Courier | Winfield. |
| Wyandotte Herald | Kansas City, Kan. |
| Valley Falls New Era | Valley Falls. |

SEMI-MONTHLIES.

| | |
|---|---|
| American Druggist and Pharmaceutical Record | New York. |
| Clay Record | Chicago, Ill. |
| Mines and Minerals | Scranton, Pa. |
| Virginia Medical Semimonthly | Richmond, Va. |
| Western Odd Fellow | Topeka. |

MONTHLIES.

| | |
|---|---|
| Advocate of Peace | Boston, Mass. |
| Christian Educator | Great Bend. |
| Good Roads Magazine | New York. |
| Hammer and Pen | New York. |
| Insurance Magazine | Kansas City, Mo. |
| Kansas City Medical Record | Kansas City, Mo. |
| Live Wire | St. Louis, Mo. |
| Myers Bros. Druggist | St. Louis, Mo. |
| Michigan Alumnus (Prof. Eugenie Galloo) | Ann Arbor, Mich. |
| Our Dumb Animals | Boston, Mass. |
| School and Fireside | Hutchinson. |
| Western Drug Record | Kansas City, Mo. |
| Western School Journal | Topeka. |

QUARTERLIES.

| | |
|---|---|
| Bulletin of the Wool Manufacturers | Boston. |
| Hartford Seminary Record | Hartford, Conn. |
| Single-tax Review (Mr. E. E. Soderstrom, Emporia) | Chicago. |
| Transactions of the American Mathematical Society (Mrs. H. B. Newson) | New York. |

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BULLETIN OF THE
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## Chronological Table.

1861.—Congress set apart and reserved for the use and support of a State University seventy-two sections of land.
1863.—Lawrence selected as location for the University of Kansas.
1864.—The University organized by the legislature.
1865.—March 31, first meeting of the Board of Regents.
1866.—July 19, Regents elected the first Faculty of the University, consisting of Elial Jay Rice, A. M., David Hamilton Robinson, A. M., and Francis Huntington Snow, A. M.
1866.—North College erected.
1866.—September 12, first session of the University opened at North College.
1870.—Department of Engineering organized.
1872.—Fraser Hall erected.
1876.—Normal Department established.
1877.—Department of Music organized.
1878.—Department of Law organized.
1883.—Medical Hall (old Chemistry Building) erected.
1885.—Department of Pharmacy established.
1885.—Normal Department discontinued.
1886.—Snow Hall erected.
1891.—The Preparatory Department discontinued, the work being left to the high schools of the state.
1891.—The University reorganized and Schools of Arts, Engineering, Law, Fine Arts and Pharmacy established.
1894.—Spooner Library erected.
1894.—Chancellor's residence erected.
1895.—Blake Hall erected.
1896.—The Graduate School established.
1899.—The Fowler Shops erected.
1899.—The School of Medicine established.
1900.—Chemistry and Pharmacy Building erected.
1902.—Natural History Museum Building erected.
1904.—The name of the School of Arts changed to the College of Liberal Arts and Sciences.
1904.—Green Hall erected.
1905.—Full four-year course in medicine established.
1905.—Eleanor Taylor Bell Memorial Hospital erected.
1906.—Auditorium-Gymnasium erected.
1906.—Clinical Laboratory erected.

## Office Hours.

THE CHANCELLOR OF THE UNIVERSITY,
Room 4, Fraser Hall,
9 A. M. to 12 M. and 1:30 to 4 P. M.

THE SECRETARY OF THE UNIVERSITY
Room 9, Fraser Hall,
8:30 A. M. to 5 P. M.

THE REGISTRAR OF THE UNIVERSITY,
Room 9, Fraser Hall,
8 A. M. to 12 M. and 1:30 to 5 P. M.

THE DIRECTOR OF THE SUMMER SESSION,
Room 17, Fraser Hall,
Tuesdays and Thursdays, 9 to 10 A. M., first term,
Mondays, Wednesdays, and Fridays, 9 to 10 A. M., second term.

THE DEAN OF THE GRADUATE SCHOOL,
Room 13, Fraser Hall,
9 to 10 A. M.

THE DEAN OF THE COLLEGE OF LIBERAL ARTS AND SCIENCES,
Room 1, Fraser Hall,
10:15 A. M. to 12:15 P. M.

THE DEAN OF THE SCHOOL OF ENGINEERING,
Room 33, Fraser Hall,
9 A. M. to 12 M.

THE DEAN OF THE SCHOOL OF LAW,
Green Hall,
9 to 10 A. M.

THE DEAN OF THE SCHOOL OF FINE ARTS,
North College,
11 A. M. to 12 M. and 2:30 to 5 P. M.

THE DEAN OF THE SCHOOL OF PHARMACY,
2d floor, Chemistry and Pharmacy Building,
10 to 11 A. M.

THE DEAN OF THE SCIENTIFIC DEPARTMENT, SCHOOL OF MEDICINE,
Basement, Medical Hall,
10:15 A. M. to 12:15 P. M.

THE DEAN OF THE CLINICAL DEPARTMENT, SCHOOL OF MEDICINE,
Simpson Block, Kansas City, Kan.,
10:15 A. M to 12:15 P. M.

# Calendar.

### Academic Year 1905-'06.

Jan. 8, Monday — Christmas recess ends.
Jan. 22 to 26, Monday to Friday, inclusive — Semiannual examinations.
Jan. 29, Monday — Second term begins.
March 28, Wednesday — First half-term ends.
March 29 to April 2, Thursday, Friday, and Monday — Spring recess.
April 3, Tuesday — Second half-term begins.
May 1, Tuesday — Spring concert by University Mandolin Club.
May 15, Tuesday — Spring concert by University Orchestra.
May 28 to June 1, Monday to Friday, inclusive — Annual examinations.
May 31, Thursday — Commencement concert by Music department, School of Fine Arts.
June 3, Sunday, 8 P. M. — Baccalaureate sermon.
June 4, Monday, 8 P. M. — Sigma Xi address.
June 5, Tuesday, 10:30 A. M. — Annual Alumni address.
June 5, Tuesday, 8 P. M. — Chancellor's reception.
June 6, Wednesday, 10 A. M. — Commencement exercises.
June 7, Thursday — Opening of Summer Session.

### Academic Year 1906-'07.

Sept. 12, Wednesday — First term begins.
Sept. 12, 13, 14, and 15, Wednesday, Thursday, Friday, and Saturday — Examination of candidates for admission, and presentation of certificates from high schools, academies, and other institutions.
Sept. 14, Friday — General assembly of students and annual address, in University Hall, at 10 A. M.
Nov. 12, Monday — Second half-term begins.
Nov. 20, Tuesday — Winter concert by University Orchestra.
Nov. 22, Thursday — Winter concert by University Glee and Mandolin Clubs.
Nov. 29 and 30, Thursday and Friday — Thanksgiving recess.
Dec. 11, Tuesday, 8 P. M. — Christmas concert by Music department, School of Fine Arts.

CHRISTMAS RECESS — Saturday, December 22, to Friday, January 4, inclusive.

Jan. 4, Friday — Christmas recess ends.
Jan. 28 to Feb. 1, Monday to Friday, inclusive — Semiannual examinations.
Feb. 4, Monday — Second term begins.
March 29, Friday — First half-term ends.
April 1, Monday — Second half-term begins.
May 2, Thursday — Spring concert by University Glee and Mandolin Clubs.
May 3 and 4 — Spring Music Festival.
May 14, Tuesday — Spring concert by University Orchestra.
May 27 to 31, Monday to Friday, inclusive — Annual examinations.
May 31, Friday — Commencement concert by Music department, School of Fine Arts.
June 2, Sunday, 8 P. M. — Baccalaureate sermon.
June 3, Monday, 8 P. M. — Phi Beta Kappa address.
June 4, Tuesday, 10:30 A. M. — Annual Alumni address.
June 4, Tuesday, 8 P. M. — Chancellor's reception.
June 5, Wednesday, 10 A. M. — Commencement exercises.

# 1905.

## JULY.

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## AUGUST.

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# 1906.

## JANUARY.

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## APRIL.

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## JUNE.

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## JULY.

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## AUGUST.

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## DECEMBER.

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# 1907.

## JANUARY.

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## FEBRUARY.

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## MARCH.

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## APRIL.

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## MAY.

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## JUNE.

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## General Information.

*The General Catalogue of the University of Kansas* is issued in the spring of each year. A copy will be sent free to any one desiring it.

*Separate Catalogues* of the SCHOOLS OF THE UNIVERSITY will be issued at the same time with the General Catalogue of the University. Separate catalogues will give complete information as to each school or department of the University. Prospective students of the School of Engineering, the School of Law, the School of Pharmacy, the School of Fine Arts, the School of Medicine, or the Summer Session will ask for the separate catalogue of the desired school. They are issued free of cost.

*The Alumni Catalogue* of the University is issued at intervals, giving a list of the graduates of the University. Copies are sent free to graduates and former students of the University.

*The University Calendar* is posted weekly upon the local bulletin-board, announcing lectures, concerts, prizes, and other matters of public interest under the auspices of the University, and as soon as possible will be printed in sufficient numbers for distribution, on request, to high schools of the state and to graduates and former students.

For catalogues and other information, address

THE UNIVERSITY OF KANSAS, Lawrence, Kan.

# PART I.

# Officers of the University.

# The Board of Regents.

CHANCELLOR FRANK STRONG, Lawrence.....*Ex officio.*
HON. SCOTT HOPKINS, Horton.....Term expires 1907
HON. FRANK G. CROWELL, Atchison..... " " 1907
HON. THOMAS W. BUTCHER, Wellington.... " " 1907
HON. THOMAS M. POTTER, Peabody..... " " 1909
HON. ALEXANDER C. MITCHELL, Lawrence, " " 1909
HON. WILLIAM A. WHITE, Emporia..... " " 1909

### Officers of the Board.

CHANCELLOR FRANK STRONG.....*President, ex officio.*
THOMAS M. POTTER.....*Vice-president.*
SCOTT HOPKINS.....*Secretary.*

### Committees of the Board.

*Instruction:*
Messrs. CROWELL, BUTCHER, AND WHITE.

*Library and Apparatus:*
Messrs. BUTCHER, POTTER, AND MITCHELL.

*Finance:*
Messrs. WHITE, POTTER, AND CROWELL.

*Buildings, Grounds, and Supplies:*
Messrs. POTTER, HOPKINS, AND MITCHELL.

*University Lands and Endowments:*
Messrs. MITCHELL, WHITE, AND CROWELL.

*Reports and Publications:*
Messrs. WHITE, POTTER, AND HOPKINS.

*Auditing of Accounts:*
Messrs. HOPKINS, BUTCHER, AND MITCHELL.

# Administrative Officers.

### The University.

FRANK STRONG, PH. D., Chancellor.

WILLIAM H. CARRUTH, PH. D., Vice-president of the Faculties

WLLIIS K. FOLKS, Secretary and Purchasing Agent.

GEORGE O. FOSTER, A. B., Registrar.

WILLIAM H. JOHNSON, A. M., High-school Visitor.

EBEN F. CROCKER, Superintendent of Buildings and Grounds.

### The Schools.

FRANK W. BLACKMAR, PH. D., Dean of the Graduate School.

OLIN TEMPLIN, A. M., Dean of College of Liberal Arts and Sciences.

FRANK O. MARVIN, A. M., Dean of the School of Engineering.

JAMES W. GREEN, A. M., Dean of the School of Law.

CHARLES S. SKILTON, A. B., Dean of the School of Fine Arts.

LUCIUS E. SAYRE, B. S., PH. M., Dean of the School of Pharmacy.

CLARENCE E. MCCLUNG, PH. D., Acting Dean of Scientific Department, School of Medicine.

MERVIN T. SUDLER, PH. D., Dean of Scientific Department, School of Medicine.

GEORGE H. HOXIE, M. D., Dean of Clinical Department, School of Medicine.

ARTHUR T. WALKER, PH. D., Director of the Summer Session.

### Library and Gymnasium.

CARRIE M. WATSON, A. B., Librarian.

JAMES NAISMITH, A. B., M. D., Director of Gymnasium.

### The Museums.

FRANK STRONG, PH. D., *ex officio* Director of the Museums.

FRANCIS H. SNOW, PH. D., LL. D., Curator of the Entomological Collections.

LEWIS L. DYCHE, A. M., M. S., Curator of the Mammals, Birds, and Fishes.

CLARENCE E. MCCLUNG, PH. D., Curator of the Vertebrate Paleontological Collections.

ERASMUS HAWORTH, PH. D., Curator of the Geological and Mineralogical Collections.

WILLIAM C. STEVENS, M. S., Curator of the Herbarium.

ALEXANDER M. WILCOX, PH. D., Curator of the Classical Museum.

**The University Geological Survey of Kansas.**

FRANK STRONG, PH. D., Director, *ex officio.*

ERASMUS HAWORTH, PH. D., Superintendent and Geologist.

EDGAR H. S. BAILEY, PH. D., Chemist.

## The University Council.

The Chancellor of the University, *Chairman.*

Prof. William Chase Stevens, *Secretary.*

Professors and heads of departments of the schools of the University.

## The Faculties.

The Faculty of each school is made up of the professors and heads of departments offering work in that school, together with other instructors whose work is chiefly in that school.

Each Faculty is the legal governing body in all matters connected *exclusively* with that school.

# Officers of Instruction and Administration.

The officers of instruction and administration in the University are divided into the following groups:

PROFESSORS.
ASSOCIATE PROFESSORS.
ASSISTANT PROFESSORS.
INSTRUCTORS.
ASSISTANT INSTRUCTORS.
LIBRARIAN AND ASSISTANTS.
BUSINESS AND EXECUTIVE OFFICERS.
FELLOWS AND SCHOLARS.

## Professors.

FRANK STRONG,
A. B., 1884, A. M., 1893, PH. D., 1897, (Yale).
*Chancellor of the University, and President of the Faculties,* 1902.* (4 F.†) 1318 Louisiana St.

WILLIAM HERBERT CARRUTH.
A. B., 1880, (University of Kansas).
A. M., 1889, PH. D., 1893, (Harvard).
*Vice-president of the Faculties, and Professor of Germanic Languages and Literatures,* 1882; 1879.
(28 F.) 1342 Louisiana St.

FRANCIS HUNTINGTON SNOW.
A. B., 1862, A. M., 1865, PH. D., 1881, (Williams).
LL. D., 1890, (Princeton).
*Professor of Organic Evolution, Systematic Entomology, and Meteorology,* 1901; 1866. (Mu.) 1345 Louisiana St.

* The date after each title indicates the year of appointment to the present rank; a second date denotes the year of first appointment in the University, when that fact is not indicated by the first date.

† Abbreviations: B = Blake Hall. C = Chemistry Building. D = Dick Building Studios. F = Fraser Hall. G = Green Hall. L = Spooner Library. M = Medical Hall. Mu = Museum of Natural History. N = North College. S = Snow Hall. S B = Simpson Block. Sh = Fowler Shops.

EPHRAIM MILLER.
A. B., 1855, A. M., 1858, PH. D., 1895, (Allegheny).
*Professor of Mathematics and Astronomy*, 1875; 1874.
(23 and 25 F.) 1244 Tennessee St.

JAMES WOODS GREEN.
A. B., 1866, A. M., 1886, (Williams).
*Dean of the School of Law, and Professor of Law*, 1878.
(G.) 637 Tennessee St.

FRANK OLIN MARVIN.
A. B., 1871, A. M., 1874, (Allegheny).
*Dean of the School of Engineering, and Professor of Civil Engineering*, 1882; 1875. (33 F.) 1603 Massachusetts St.

EDGAR HENRY SUMMERFIELD BAILEY.
PH. B., 1873, (Yale).
PH. D., 1883, (Illinois Wesleyan).
*Professor of Chemistry and Metallurgy, and Director of Chemical Laboratories*, 1883. (C.) 1329 Ohio St.

ALEXANDER MARTIN WILCOX.
A. B., 1877, PH. D., 1880, (Yale).
*Professor of Greek Language and Literature*, 1885.
(18 F.) 1605 Vermont St.

LUCIUS ELMER SAYRE.
B. S., 1897, (University of Michigan).
PH. G., 1866, PH. M., 1896, (Philadelphia).
*Dean of the School of Pharmacy, and Professor of Pharmacy*, 1885. (C.) 1323 Ohio St.

LUCIEN IRA BLAKE.*
A. B., 1877, (Amherst).
PH. D., 1884, (Berlin).
*Professor of Physics and Electrical Engineering*, 1887.
(2d floor, B.) New Eldridge.

LEWIS LINDSAY DYCHE.
A. B., B. S., 1884, A. M., 1886, M. S., 1888, (University of Kansas).
*Professor of Systematic Zoology*, 1889; 1883.
(Mu.) 1611 Massachusetts St.

FRANK WILSON BLACKMAR.
PH. D., 1889, (Johns Hopkins).
*Dean of the Graduate School, and Professor of Sociology and Economics*, 1889. (13 F.) 1115 Ohio St.

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* On leave, 1905–'06, with Submarine Signal Company, Boston.

CHARLES GRAHAM DUNLAP.
A. B. 1883, A. M., 1899, (Ohio Wesleyan).
LITT. D., 1892, (Princeton).
*Professor of English Literature*, 1890; 1887.
(14 F.) 925 Kentucky St.

CARL ADOLPH PREYER, (Vienna).
*Professor of Piano, Counterpoint, Canon, and Fugue*, 1892.
(N.) 938 Louisiana St.

OLIN TEMPLIN.
A. B., 1886, A. M., M. S., 1890, (University of Kansas).
*Dean of the College of Liberal Arts and Sciences, and Professor of Philosophy*, 1893; 1886. (1 F.) 1025 Missouri St.

EDWIN MORTIMER HOPKINS.
A. B., 1888, PH. D., 1894, (Princeton).
*Professor of Rhetoric and English Language*, 1893; 1889.
(22 F.) 1201 Tennessee St.

FRANK HEYWOOD HODDER.
A. B., 1883, PH. M., 1883, (University of Michigan).
*Professor of American History and Political Science*, 1893; 1891. (13 F.) 1115 Louisiana St.

ERASMUS HAWORTH.
B. S., 1881, M. S., 1884, (University of Kansas).
PH. D., 1888, (Johns Hopkins).
*Professor of Geology, Mineralogy, and Mining, and Superintendent of the Geological Survey*, 1894; 1892.
(S.) 1503 Massachusetts St.

ARTHUR TAPPAN WALKER.
A. B., 1887, (University of New York City).
A. M., 1892, (Vanderbilt).
PH. D., 1898, (University of Chicago).
*Director of the Summer Session, and Professor of Latin Language and Literature*, 1897, (17 F.) 1647 Louisiana St.

WILLIAM CHASE STEVENS.
B. S., 1885, M. S., 1893, (University of Kansas).
*Professor of Botany*, 1899; 1889. (9 and 10 S.) 1121 Louisiana St.

ARVIN SOLOMON OLIN.
A. B., 1892, (Ottawa University).
A. M., 1894, (University of Kansas).
*Professor of Education*, 1899; 1893. (12 F.) 1134 Louisiana St.

WILLIAM ALEXANDER GRIFFITH.
(Jullien Art School, Paris.)
*Professor of Drawing and Painting*, 1899.
(S.) 1144 Indiana St.

EUGÉNIE GALLOO.
B. L., 1892, (University of Michigan).
Académie de Paris, Brevet, 1881, Sorbonne, 1884, (University of France).
A. M. 1895, (University of Kansas).
*Professor of Romance Languages and Literatures*, 1900; 1892.
(27 F.) 1324 Louisiana St.

WILBUR CORTEZ ABBOTT.
A. B., 1892, A. M., 1903, (Wabash College).
B. Litt., 1897, (Oxon.)
*Professor of European History*, 1902.
(11 F.) 1116 Louisiana St.

WILLIAM LIVESEY BURDICK.
A. B., 1882, A. M., 1884, (Wesleyan).
Ph. D., 1885, (Grant).
LL. B., 1898, (Yale).
*Professor of Law*, 1902; 1898. (G.) Jackson Block.

CHARLES SANFORD SKILTON.
A. B., 1889, (Yale).
*Dean of the School of Fine Arts, and Professor of Musical Theory and Organ*, 1903. (N.) 947 Louisiana St.

CHARLES EDWARD HUBACH.
(Graduate of the New England Conservatory of Music).
*Professor of Voice*, 1903. (N.) 1232 Louisiana St.

JOHN ELOF BOODIN.
A. B., 1895, A. M., 1896, (Brown.)
Ph. D., 1899, (Harvard).
*Professor of Philosophy*, 1904. (12 F.) 1026 Ohio St.

IDA HENRIETTA HYDE.
B. S., 1891, (Cornell).
Ph. D., 1896, (Heidelberg, Germany).
*Professor of Physiology*, 1905; 1899.
(M.) 1229 Tennessee St.

WILLIAM HAMILTON JOHNSON.
A. B., 1885, A. M., 1892, (University of Kansas).
*Professor of Education*, 1905, *and High-school Visitor*, 1903.
(3 F.) 1201 Oread Ave.

HENRY BYRON NEWSON.
B. S., 1883, PH. D., 1892, (Ohio Wesleyan).
*Professor of Mathematics*, 1905; 1890.
(24 F.) 1702 Massachusetts St.

GEORGE HOWARD HOXIE.
A. B., 1893, A. M., 1896, (Union University).
M. D., 1901, (University of Zurich).
*Professor of Internal Medicine, and Dean of the Clinical Department of the School of Medicine*, 1905; 1902.
(S. B.) Kansas City, Kan.

BRUCE VICKROY HILL.
PH. D., 1902, (Berlin).
*Acting Professor of Physics and Electrical Engineering*, 1905.
(2d floor, B.) 1333 Ohio St.

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## Associate Professors.

JAMES NAISMITH.
A. B., 1887, (McGill University).
M. D., 1898, (Gross Medical College).
*Associate Professor of Physical Education, and Chapel Director*, 1898. (Basement, S.) 1108 Tennessee St.

MARSHALL ALBERT BARBER.
A. B., 1891, (University of Kansas).
A. M., 1894, (Harvard).
*Associate Professor of Cryptogamic Botany and Bacteriology*, 1899; 1895. (9 S.) 1134 Mississippi St.

SAMUEL JOHN HUNTER.
A. B., 1893, A. M., 1893, (University of Kansas).
*Associate Professor of Entomology*, 1899; 1896.
(6 and 7 S.) 1309 Ohio St.

MILES WILSON STERLING.
A. B., 1883, A. M., 1893, (University of Kansas).
*Associate Professor of Greek*, 1901; 1883.
(18 F.) 1129 Louisiana St.

RAPHAEL DORMAN O'LEARY.
A. B., (University of Kansas, 1893; Harvard, 1895).
*Associate Professor of English*, 1901; 1896.
(22 F.) 1106 Louisiana St.

WILLIAM EDWARD HIGGINS.
B. S., 1888, LL. B. 1894, (University of Kansas).
*Associate Professor of Law*, 1901; 1899. (G.) 1238 Ohio St.

CLARENCE ERWIN McCLUNG.
PH. G., 1892, A. B., 1896, A. M., 1898, PH. D., 1902, (University of Kansas).
*Acting Dean of the Scientific Department, School of Medicine, and Associate Professor of Zoology*, 1901; 1897.
(M.) 1209 Ohio St.

HANNAH OLIVER.
A. B., 1874, A. M., 1888, (University of Kansas).
*Associate Professor of Latin*, 1905; 1890.
(17 F.) 802 Tennessee St.

ELMER FRANKLIN ENGEL.
A. B., 1892, (University of Kansas).
A. M., 1898, (Harvard).
*Associate Professor of German*, 1905; 1892.
(28 F.) 1211 Kentucky St.

PERLEY F. WALKER.
B. M. E., 1896, (University of Maine).
M. M. E., 1901, (Cornell).
*Associate Professor of Mechanical Engineering*, 1905.
(Sh.) 125 Park St.

MERVIN TUBMAN SUDLER.
PH. D., 1899, (Johns Hopkins).
M. D., 1901, (College of Physicians and Surgeons, Baltimore).
*Dean of the Scientific Department of the School of Medicine, and Associate Professor of Anatomy*, 1905.
(M.) 1209 Ohio St.

SAMUEL CHARLES EMLEY.
A. B., 1899, (University of Kansas).
M. D., 1902, (Rush Medical College).
*Associate Professor of Pathology*, 1905.
(S.) 1549 Massachusetts St.

CHARLES MOREAU HARGER.
L. H. D., 1901, (Bethany).
*Director and Lecturer, Course in Journalism*, 1905.
Abilene, Kan.

SELDEN LINCOLN WHITCOMB.
A. B., 1887, (Iowa College).
A. M., 1893, (Columbia).
*Associate Professor of English Literature*, 1905.
(22 F.) 1026 Ohio St.

HAMILTON PERKINS CADY.
A. B., 1897, PH. D., 1903, (University of Kansas).
*Associate Professor of Chemistry*, 1905; 1899.
(C.) 1600 Kentucky St.

FRANK JOHNSON HALL.
M. D., 1897, (Kansas City Medical College).
*Associate Professor of Clinical Pathology, and Director of the Pathological Laboratory*, 1905. (S. B.) Kansas City, Kan.)

EDGAR GEORGE FRAZIER.
PH. B., 1900, (Tabor), 1901, (University of Chicago).
*Associate Professor of Public Speaking and Debate*, 1905; 1901.
(25, 5th floor, F.) 1219 Kentucky St.

——— ———.
*Associate Professor of Law.*

## Assistant Professors.

MARTIN EVERETT RICE.
B. S., 1891, M. S., 1893, (University of Kansas).
*Assistant Professor of Physics and Electrical Engineering*, 1892. (1st floor, B.) 1223 Vermont St.

FRANK EMERSON WARD.
(State Normal, Indiana).
*Superintendent of Fowler Shops and Shop Instruction*, 1899; 1889. (Sh.) 1336 Kentucky St.

ARCHIBALD HOGG.
A. B., 1894, LL. B., 1896, (University of Kansas).
*Assistant Professor of Philosophy*, 1899. (12 F.) 1227 Ohio St.

RALPH WALDO CONE.
A. B., 1895, (University of Kansas).
A. M., 1897, (Harvard).
*Assistant Professor of Sociology and Economics*, 1899.
(13 F.) 1310 Louisiana St.

GEORGE LUTHER LINCOLN.*
A. B., 1896, A. M., 1897, (Harvard).
*Assistant Professor of French,* 1899. (27 F.) 1345 Louisiana St.

L. D. HAVENHILL.
PH. C., 1893, PH. M., 1894, (University of Michigan).
B. S., 1903, (University of Kansas).
*Assistant Professor of Pharmacy,* 1899.
(42 C.) 1609 Vermont St.

WILLIAM CHRISTIAN HOAD.
B. S., 1898, (University of Kansas).
*Assistant Professor of Civil Engineering,* 1900.
(32 F.) 1540 Kentucky St.

ALMA LE DUC.
PH. B., 1899, (University of Chicago).
*Assistant Professor of French and Spanish,* 1900.
(27 F.) 1244 Tennessee St.

CHARLES MORGAN STERLING.
A. B. 1897, (University of Kansas).
*Assistant Professor of Pharmacognosy,* 1901.
(41 C.) 923 Indiana St.

ALBERTA LINTON CORBIN.
A. B., 1893, (University of Kansas).
PH. D., 1902, (Yale).
*Assistant Professor of German,* 1901. (28 F.) 1108 Ohio St.

JOHN NICHOLAS VAN DER VRIES.
A. B., 1896, A. M., 1899, (Hope).
PH. D., 1901, (Clark).
*Assistant Professor of Mathematics,* 1901.
(23 F.) 925 Kentucky St.

FREDERICK NEWTON RAYMOND.*
A. B., 1896, (University of Kansas).
A. M., 1897, (Columbia).
*Assistant Professor of English,* 1901.
(22 F.) 811 Mississippi St.

MARGARET LYNN.
B. S., 1889, (Tarkio).
A. M., 1900, (University of Nebraska).
*Assistant Professor of English,* 1901. (22 F.) 1108 Ohio St.

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* Absent on leave, 1905–'06.

RICHARD McNAMEE FREEMAN.
E. E., 1900, (Lehigh).
*Assistant Professor of Electrical Engineering*, 1901.
(Sh.) 642 Louisiana St.

CARL LOTUS BECKER.
B. L., 1896, (University of Wisconsin).
*Assistant Professor of European History*, 1902.
(11 F.) 1134 Mississippi St.

FRANK EGBERT BRYANT.*
B. L., 1899, A. M., 1901, (University of Michigan).
*Assistant Professor of English*, 1902.
(22 F.) 1116 Louisiana St.

GEORGE JUSSEN HOOD.
B. S., 1902, (University of Kansas).
*Assistant Professor of Mechanical Drawing*, 1902.
1447 Vermont St.

RALPH EMERSON BASSETT.
A. B., 1889, A. M., 1890, (Harvard).
*Assistant Professor of Romance Languages*, 1903.
(27 F.) 746 Ohio St.

DAVID FORD McFARLAND.
A. B., 1900, A. M., 1901, (University of Kansas).
M. S., 1903, (Yale).
*Assistant Professor of Chemistry*, 1903.
(C.) 929 Connecticut St.

ARTHUR JEROME BOYNTON.
A. B., 1901, (Harvard).
A. M., 1902, (Columbia).
*Assistant Professor of Sociology and Economics*, 1903.
(13 F.) 1704 Tennessee St.

CHARLES HAMILTON ASHTON.
A. B., 1887, (Union).
A. M., 1893, (Harvard).
*Assistant Professor of Mathematics*, 1903.
(24 F.) 1202 Ohio St.

GEORGE FREDERICK KAY.
B. S., A. M., 1902, (Toronto).
*Assistant Professor of Geology and Mineralogy*, 1904.
(Basement, F.) 1333 Ohio St.

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* Absent on leave, 1905–'06.

ROBERT WILLIAM CURTIS.
A. B., 1896, (Trinity).
PH. D., 1904, (Yale).
*Assistant Professor of Chemistry*, 1904. (C.) 1345 Louisiana St.

ALBERT KEMP HUBBARD.
PH. B., 1901, (Yale).
*Assistant Professor of Civil Engineering*, 1904.
(32 F.) 1129 Louisiana St.

CHARLES IVES CORP.
B. S., 1903, (University of Kansas).
*Assistant Professor of Mechanical Engineering*, 1904.
(Sh.) 114 W. Lee St.

ADAM FREMONT HENDRIX.
A. B., 1893, A. M. 1894, (Central).
*Assistant Professor of Latin*, 1905; 1903.
(17 F.) 1130 Tennessee St.

EDWIN FISKE STIMPSON.
B. S., 1890, (University of Kansas).
*Assistant Professor of Physics*, 1905; 1901.
(B.) 926 Indiana St.

MARY COOLIDGE FISH.
(Sargent Normal School of Physical Training).
*Assistant Professor of Physical Education*, 1905; 1903.
(Basement, S.) 1131 Ohio St.

LOUIS EUGENE SISSON.
A. B., 1904, (Leland Stanford).
*Assistant Professor of Rhetoric*, 1905; 1904.
(22 F.) 1126 Kentucky St.

WILLIAM JACOB BAUMGARTNER.
A. B., 1900, A. M., 1901, (University of Kansas).
*Assistant Professor of Zoology and Histology*, 1905; 1904.
(S.) 1635 Massachusetts St.

HENRY OTTO KRUSE.
A. B., 1894, A. M., 1903, (University of Kansas).
*Assistant Professor of German*, 1905; 1904.
(28 F.) 1601 Tennessee St.

ELISE NEUENSCHWANDER.
A. B., 1898, (University of Kansas).
*Assistant Professor of French*, 1905. (27 F.) 1324 Louisiana St.

HERBERT ALLAN RICE.
C. E., 1897, (Ohio State University).
*Assistant Professor of Civil Engineering*, 1905.
(35 F.) 1310 Louisiana St.

NED JOHNSON WHEELER.
B. S., 1902, (Purdue University).
*Assistant Professor of Mechanical Engineering*, 1905.
(32 F.) 1227 Ohio St.

WILLIAM CLARENCE LANSDON.
A. B., 1888, (Kansas Normal College).
*Manager of Athletics*, 1905. (Basement, S.) 533 Ohio St.

CHARLES HENRY GRAY.
B. L., 1895, M. L., 1896, (University of Michigan).
PH. D., 1904, (University of Chicago).
*Assistant Professor of Rhetoric*, 1905.
(22 F.) 1311 Tennessee St.

WALLACE NOTESTEIN.
A. B., 1900, (Wooster).
A. M., 1903, (Yale).
*Assistant Professor of European History*, 1905.
(11 F.) 1201 Oread Ave.

FRANCIS WILLIAM BUSHONG.*
A. B., 1885, A. M., 1888, (Franklin and Marshall).
S. D., 1900, (College of Emporia).
*Assistant Professor of Chemistry*, 1905.
(C.) 1302 Tennessee St.

HERBERT HUNTER VAUGHAN.*
A. B., 1903, (University of Michigan).
*Assistant Professor of French*, 1905. (27 F.) 941 Vermont St.

LAWRENCE C. HODSON.
B. C. E., 1900, (Iowa State College).
E. M., 1901, (Michigan College of Mines).
*Assistant Professor of Mining Engineering*, 1905.
(Basement, F.) 709 Ohio St.

WILLIAM JOSEPH PELO.
A. B., 1894, A. M., 1904, (Harvard).
*Assistant Professor of Education*, 1905.
(8 F.) 1145 Louisiana St.

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* Appointed for one year.

## Instructors.

GEORGE WILLIS HANSON.
*Forge and Foundry Instructor*, 1899. (Sh.) 1717 Vermont St.

HARRIET GREISSINGER.
Mus. B., 1895, (University of Kansas).
*Instructor in Piano*, 1902. (N.) 940 Indiana St.

ERICH MUENTER.*
A. B., 1899, (University of Chicago).
*Instructor in Germanic Languages and Literatures*, 1901.

EUGENE SMITH.
M. D., 1876, (Rush).
*Demonstrator in Anatomy*, 1903.
(Basement, S.) 736 Kentucky St.

FRANK EVERETT JONES.
(Armour Institute).
*Instructor in Carpentry and Pattern-making*, 1903.
(Sh.) 740 Mississippi St.

HERBERT WILLIAM EMERSON.
Ph. C., 1901, B. S., 1902, (University of Michigan).
*Instructor in Pharmacy*, 1903. (25 C.) 1401 Kentucky St.

LULU GARDNER.†
A. B., 1905, (University of Kansas).
*Instructor in English Literature*, 1905; 1903.
(22 F.) 1325 Tennessee St.

RALPH WALDO BAHNER.†
A. B., 1901, (Lane University).
A. M., 1905, (University of Kansas).
*Instructor in German*, 1905; 1904. (28 F.) 811 Mississippi St.

WILLIAM KIRK TRIMBLE.
M. D., 1900, (Kansas City Medical College).
*Instructor in Clinical Pathology*, 1905.
(S. B.) Kansas City, Kan.

HELEN PHIPPS.
(American Conservatory of Music).
*Instructor in Violin*, 1905. (N.) 1108 Ohio St.

A.

*Absent on leave, 1905–'06. †Appointed for one year.

## Assistant Instructors.

BLANCHE LYONS.
(New England Conservatory of Music.)
*Assistant Instructor in Voice*, 1904.
(D.) 936 New Hampshire St.

MAUDE BEATRICE COOKE.
(University of Kansas.)
*Assistant Instructor in Piano*, 1904. (D.) 1100 Vermont St.

MAUD MILLER.
MUS. B., 1898, (University of Kansas).
*Assistant Instructor in Piano*, 1904. (D.) 1108 Ohio St.

JULIA RIGHTER.
MUS. B., 1897, (University of Kansas).
*Assistant Instructor in Piano*, 1904. (D.) 1132 Tennessee St.

LOUISE WIEDEMANN.
MUS. B., 1897, (University of Kansas).
*Assistant Instructor in Piano*, 1904.
(D.) 835 Massachusetts St.

LARRY M. PEACE.
A. B., 1901, (University of Kansas).
*Preparator and Demonstrator in the Botanical Laboratory*, 1902. (S.) 1111 Mississippi St.

HANDEL T. MARTIN.
*Museum Assistant in Paleontology*, 1899.
(Mu.) 1031 Mississippi St.

ELBERT STEPHEN TUCKER.
*Museum Assistant in Systematic Entomology*, 1902.
(Mu.) 1218 Tennessee St.

LEVERETT ALLEN ADAMS.
A. B., 1903, (University of Kansas).
*Museum Assistant in Zoology*, 1903. (Mu.) 741 Tennessee St.

WARREN FRED FARAGHER.
*Laboratory Assistant in Chemistry*, 1904.
(C.) 1219 Kentucky St.

MARY AUGUSTA DUKE.
*Assistant Instructor in Zoology*, 1905. (S.) 821 Tennessee St.

JAMES ABRAM GARFIELD SHIRK.
A. B., 1901, A. M., 1902, (McPherson College).
M. S., 1905, (University of Kansas).
*Assistant Instructor in Mathematics*, 1905.
(24 F.) 1345 Vermont St.

ULYSSES GRANT MITCHELL.
A. B., 1898, (Central Normal College).
*Assistant Instructor in American History*, 1905.
(14 F.) 1708 Massachusetts St.

THOMAS BARTLETT FORD.
A. B., 1904, (University of Kansas).
*Assistant Instructor in Chemistry.*
(C.) 1638 New Hampshire St.

JOHN KING HARVEY.
*Assistant Instructor in Physiology*, 1905.
(M.) 920 Ohio St.

LALIA VIOLA WALLING.
A. B., 1905, (University of Kansas).
*Laboratory Assistant in Physiology*, 1905.
(M.) 945 Kentucky St.

HERMAN C. ALLEN.
A. B., 1904, (McPherson College).
*Laboratory Assistant in Chemistry*, 1905.
(C.) 1312 Vermont St.

CHARLES D. BUNKER.
*Museum Assistant in Zoology*, 1905.

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## Librarian and Assistants.

CARRIE M. WATSON,
A. B., 1877, (University of Kansas).
*Librarian*, 1887. (L.) 1345 Tennessee St.

EDITH M. CLARKE.
A. B., 1895, (University of Kansas).
*Cataloguer*, 1904. (L.) 1210 Ohio St.

CLARA SCIOTO GILLHAM.
A. B., 1884, (University of Kansas).
*Loan Desk Assistant*, 1904. (L.) 1345 Tennessee St.

MARY MAUD SMELSER.
*Accession Assistant*, 1904. (L.) 940 Kentucky St.

DORA CATHERINE RENN.
*Reference Assistant*, 1899. (L.) 700 Illinois St.

KATE ELIZABETH DINSMOOR.
A. B., 1903, (University of Kansas).
*Reference Assistant*, 1905. (L.) 201 Maine St.

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## Business and Executive Officers.

WILLIS K. FOLKS.
*Secretary and Purchasing Agent*, 1898. (9 F.) West Lawrence.

GEORGE O. FOSTER.
A. B., 1901, (University of Kansas).
*Registrar of the University*, 1899; 1891. (9 F.) 1324 Ohio St.

EBEN F. CROCKER.
*Superintendent of Buildings and Grounds*, 1902.
(Basement, F.) West of City Limits.

EDWARD E. BROWN.
*Accountant*, 1894. (9 F.) 1336 Massachusetts St.

MINNIE MOODIE.
*Secretary to the Chancellor*, 1902. (4 F.) Southeast Lawrence.

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## Fellows and Scholars.

ARTHUR DUNN PITCHER.
A. B., 1906, (University of Kansas).
*Fellow in Mathematics*, 1905.

LULA RENN.
A. B., 1901, (University of Kansas).
*Fellow in English*, 1905.

MARY PATTERSON CLARKE.
A. B., 1903, (University of Kansas).
*Fellow in European History*, 1905.

ROY CROSS.
A. B., 1905, (University of Kansas).
*Fellow in Chemistry*, 1905.

JOHN FREDERICK BENDER.
A. B., 1906, (University of Kansas).
*Fellow in German*, 1905.

HETTIE MOSSLER, *vice.*
A. B., 1904, (University of Kansas).

MARY CECILIA COPLEY.
A. B., 1905, (University of Kansas).
*Fellow in French*, 1905.

CORA ALICE TAYLOR.
A. B., 1904, (University of Kansas).
*Fellow in Sociology*, 1905.

ROY GRAHAM HOSKINS.
A. B., 1905, (University of Kansas).
*Fellow in Zoology*, 1905.

MARIE GREENE.
A. B., 1904, (University of Kansas).
*Fellow in Philosophy*, 1905.

MIRIAM SHELDON.
A. B., 1903, (University of Kansas).
*Sara T. D. Robinson Research Scholar at Marine Biological Laboratory, Woods Hole, Mass.*, 1905.

ANNA BLANCHE CLINGER.
*Marcella Howland Memorial Scholar*, 1905.

AMY ELIZABETH LANGWORTHY.
*Lucinda Smith Buchan Memorial Scholar*, 1905.

MABEL EGGLESTON.
*Association of Collegiate Alumnæ Scholar*, 1905.

PLAN FOR THE UNIVERSITY CAMPUS, BY CHARLES KESSLER.

# PART II.

# The University.

(33)

# The University.

## Organization.

The work of the University is comprehended in the schools and departments mentioned below. Everything pertaining to the University organization is under the control of the Board of Regents. Each school and department is also under the control of the Chancellor and a separate faculty of instruction.

## Departments of Instruction.

I.—The Graduate School.

II.—The College of Liberal Arts and Sciences.

III.—The School of Engineering.

1. The Civil Engineering Course.
2. The Electrical Engineering Course.
3. The Mechanical Engineering Course.
4. The Mining Engineering Course.
5. The Chemical Engineering Course.

IV.—The School of Law.

V.—The School of Fine Arts.

1. The Course in Piano Playing.
2. The Course in Organ Playing.
3. The Course in Violin Playing.
4. The Course in Voice Culture.
5. The Course in Drawing and Painting.
6. The Course in Elocution.

VI.—The School of Pharmacy.

1. The Short Course in Pharmacy.
2. The Three-year Course in Pharmacy.
3. The Collegiate Course in Pharmacy.

VII.—The School of Medicine.

VIII.—The Summer Session.

**Institutions Connected with the University and under its Control.**

IX.—The Library.

X.—The Gymnasium.

XI.—The Museums.

XII.—The University Geological Survey.

**The Graduate School.** In the College of Liberal Arts and Sciences and the School of Engineering there are advanced courses leading to the degrees of master of arts and science, doctor of philosophy, and the higher engineering degrees. These courses have been organized into a Graduate School, open to graduates of this and, under certain conditions, other universities and colleges.

**The College of Liberal Arts and Sciences.** The College of Liberal Arts and Sciences offers instruction in literature, science, and the arts, leading to the degree of bachelor of arts. It is the central department of the University and the foundation upon which all the rest are built. In it are included many of the courses offered in the other departments of the University, and there is no distinct separation of faculties, nearly all being included in the Faculty of the College of Liberal Arts and Sciences. The courses of study are mainly elective and presume four years of residence work.

**The School of Engineering** offers courses in civil, electrical, mechanical, mining and chemical engineering, leading to the degree of bachelor of science, requiring four years of residence work.

**The School of Law** offers three years of legal instruction, leading to the degree of bachelor of laws.

**The School of Fine Arts** offers courses in piano, organ and violin playing, voice culture, drawing, painting, and elocution.

**The School of Pharmacy** offers two, three and four years' work in pharmaceutical study.

**The School of Medicine** offers a complete four-year medical course. The work of the first two years is done in the laboratories at the University. The work of the second two years is done in the clinical laboratories at Rosedale.

**The Summer Session** (six weeks) is intended to meet the wants of teachers and others who wish to pursue collegiate study but are unable to attend the regular sessions of the University. Collegiate credit is allowed for certain courses offered.

**The Library.** The library of the University is regarded as the center of the instructional life of the University. It is used to supplement the instruction in all departments, and also for wide reading for purposes of general information by students of the University.

**The Gymnasium.** The gymnasium is the center of the physical education of the students in general, and also of the athletics of the University.

**The Museums.** The museums are used for the storing of collections valuable from a scientific point of view, and also for the purpose of supplementing the scientific instruction of the University.

**The Geological Survey.** The Geological Survey is connected with the University only by fact that the director, superintendent and chemist are officers in the University. The work is done by these officers, and especially by the superintendent, with whom almost the entire management rests, without extra compensation. It is regarded as work which the University should do for the state, and the appropriation for the survey is used entirely for the ordinary expenses of the survey.

## Government.

The legislature of 1889 passed an act providing for the government of the University and repealing all former legislation bearing upon the same subject. This act declares that the government of the University shall be vested in a board of seven Regents, six of whom shall be appointed by the governor and confirmed by the senate, and whose term of office shall be four years; that the Board of Regents shall be a body corporate, under the name of "The Regents of the University of Kansas," and as such may sue and be sued, make contracts, and hold and transfer property, both real and personal, for the University.

The Board of Regents is also invested with the power to elect a Chancellor, who shall be the chief officer of the University, and president of the Board of Regents, with the full power of a regent; to appoint professors, assistants, tutors; to increase and diminish their number as the interest of the University may require; to employ officers and employees, as in their judgment the needs of the University require.

The Board is also empowered to confer such degrees and grant such diplomas as are usually conferred and granted by institutions of learning.

## Discipline.

That the generosity of the state may not be abused, and that perfect justice may be done all who are earnestly striving to make the best possible use of the opportunities offered, there is but a single requirement, *unexceptional deportment and strict attention to University duties.*

## The University and the State.

The University of Kansas is an integral part of the free public-school system of the state. It was established by an act of the legislature of 1864, and its object, as defined by that act, is to "provide the inhabitants of the state with the means of acquiring a thorough knowledge of the various branches of literature, science, and the arts." In realizing the object thus set for it, the University stands in direct connection with the high schools of the state. It begins where the high school ends, and thus completes, for so many as avail themselves of the advantages, the thorough education which the state endeavors to provide. Persons who have completed, in any high school or other institution of learning, the work required in preparation for the University, are admitted to its privileges without examination. For this reason the high schools and academies of the state have in general arranged their courses of study in accordance with the University requirements. Though the University was established and is maintained, primarily, for the sons and daughters of Kansas, it also opens its doors, at very moderate tuition, to the young men and women of other states.

At the head of the public educational system of Kansas, the University endeavors to encourage whatever may contribute to the higher intellectual and moral interests of the state. Believing that the strength and value of the University are measured by its service to the state at large, and wishing to reach as many of the citizens as possible in a helpful and stimulating way, the authorities cordially invite all who desire to pursue courses of study or investigation to connect themselves with the University. All who are seeking special information or self-culture and the highest type of citizen life and influence should feel that, by the generosity of the state, advice and information are freely placed at their command.

## History and Location.

The idea of a State University in Kansas dates from the early days of Kansas territorial government. Each of the constitutions adopted for the territory of Kansas during the period of its memorable struggles provided for the establishment of an institution of higher learning, to be supported by public funds. The last of these, which became, on the admission of Kansas to the Union, the constitution of the state, declares that "provision shall be made by law for the establishment, at some eligible and central point, of a

State University, for the promotion of literature and the arts and sciences."

By an act of Congress, approved January 29, 1861, the day on which Kansas was admitted to statehood, seventy-two sections of land were set apart and reserved for the use and support of a State University. The state accepted the trust, and in 1863 the legislature selected the city of Lawrence as the location for the institution. One year later the legislature passed an act organizing the University and giving to it the name of "The University of Kansas." A charter was immediately drawn up, and the government of the institution was vested in a Board of Regents, appointed by the governor.

The Board thus appointed held its first meeting on March 21, 1865, and decided to open a preparatory department as soon as the citizens of Lawrence should provide rooms for that purpose. This the citizens undertook to do, and by the middle of September, 1866, they were enabled, by the aid of gifts from various individuals and organizations, to erect the building now known as North College. The first Faculty of the University had been elected by the Board of Regents in July of the same year, and on the 12th of September the University was opened to the young men and women of the state.

In 1876 the legislature of the state established a normal department, which, though successful, was discontinued in 1885. The Law School was opened in October, 1878, and the School of Pharmacy was established in 1885. A course in engineering was arranged as early as 1873, but remained a part of the collegiate department until 1891, when the School of Engineering was organized and the collegiate department became known as the School of Arts. During the same year the preparatory department was discontinued, and the departments of music and art were combined to form the School of Fine Arts. The Graduate School was organized in 1896; and in 1899 the preparatory medical course, which had been offered in the collegiate department since 1880, was extended into a regular medical course, constituting the work of the School of Medicine. In 1904 the Board of Regents changed the name of the School of Arts to the College of Liberal Arts and Sciences.

Rev. R. W. Oliver, the first Chancellor of the University, resigned his position after one year of service, and was succeeded by Gen. John Fraser. In 1874 Dr. James Marvin was made Chancellor. His resignation, in 1883, was followed by the election of Dr. Joshua A. Lippincott. Prof. Francis H. Snow, who had been a member of the Faculty from the beginning, was elected Chancellor in 1889. In 1901, on account of failing health, Chancellor Snow resigned. Mr.

W. C. Spangler, a graduate of the University and a member of the Board of Regents, was appointed to act as Chancellor until the election of a regular incumbent. Frank Strong, Ph. D., was elected in April, 1902, and assumed the office August 1 of that year.

The University is situated on a projection of the bluffs bordering the Kansas river valley, known as Mount Oread. The view from the campus and buildings includes a broad and varied expanse of valley and upland, dotted with evidences of the productiveness of the soil and the thrift of the people.

Lawrence is a city of about 12,000 inhabitants, and is situated forty miles west of Kansas City. It is a healthful city, and offers many advantages as a place of residence for those desiring the benefits afforded by the University.

## Buildings and Grounds.

The University campus comprises 163.5 acres at Lawrence and 7.5 acres in the campus of the Medical School, at Rosedale. There are thirteen University buildings, eight of which were erected by the state and five by private gifts. Eleven of these buildings are used for the purposes of instruction, the remaining two being the heating plant and the Chancellor's residence. A gymnasium and a clinical laboratory are in course of erection.

**North College.** This structure was the first building to be erected. It is fifty feet square, three stories high, and contains eighteen rooms. It was completed in 1866, from which time until 1872 the entire work of the University was carried on within its walls. In 1872 Fraser Hall was completed, and North College was for a time closed. In 1890 it was again opened, and, until the end of the school year 1893–'94, was used by the School of Law. It is at present used by the School of Fine Arts.

**Fraser Hall.** This building was erected in 1872, to better accommodate the growing school and to relieve the crowded rooms of North College. It is 246 feet in extreme length, 98 feet wide in center, wings 62 feet each. There are fifty-four rooms in this building, of which one, the main audience room, containing an electric pipe-organ, is 94 feet long and 56 feet wide. This room has a seating capacity of 1200. There are also in Fraser Hall eighteen lecture-rooms, each large enough to accommodate classes of seventy-five to eighty students. In this building are located the executive offices of the University, including the Chancellor's office, the office of the Secretary, and the office of the Registrar.

The building is named in honor of Gen. John Fraser, the first active Chancellor of the University.

**Medical Hall.** This building is a structure in the form of a T, the main part, extending east and west, being 80 by 35 feet, and the L north of this 40 feet square. The basement is used for work in anatomy. The large, well-lighted room of the second floor is the physiological laboratory. The east wing of this floor is occupied as a lecture-room, and is capable of seating seventy-five students. Other rooms are used for private laboratories, library, etc.

**Snow Hall.** This structure was erected in 1886, from a $50,000 appropriation by the legislature. It is 110 feet in length by 100 feet wide, two stories in height, each 16 feet in the clear, and is provided with an attic of 12 feet, and with an ample basement, almost entirely above ground. The entire basement is now used for the gymnasium. The geological department occupies the two southeast rooms of the first floor. The departments of zoology and botany occupy the large west room of the first floor for laboratory purposes. The entire second floor is devoted to laboratories for advanced work in botany and zoology. The west room of the attic is used for the geological collections. The south room is the botanical museum. The department of drawing and painting occupies the remainder of the attic. On the first floor of the east half is the lecture-room, extending through the basement and first story, and arranged in amphitheater style. This room has accommodations for 200 students. The building is named in honor of Professor and ex-Chancellor Francis Huntington Snow.

**Spooner Library.** This building was erected in 1894, at a cost of $75,000, by the generosity of William B. Spooner, of Boston. Its length is 112 feet and extreme width 50 feet. The building is two stories high, with a basement, the greater part of which is above ground. On the first or main floor are located the general reading-room, a newspaper room, and the Librarian's and Cataloguer's offices. The reading-room is admirably arranged and lighted. In the newspaper room are kept the county and city weeklies and dailies published within the state. In addition, dailies published in all the larger cities of the United States are kept on file. The second floor of the building is also devoted to library purposes. In the basement are seminary rooms used for private study of students in the various departments. The building is lighted throughout by electricity. Its every appointment is modern and its facilities and usefulness unexcelled.

**Blake Hall.** This is of Chateau Renaissance style, three stories

high, of Cleveland, Ohio, sandstone, and was completed September, 1895, at a cost of $58,000. Besides a general lecture-room seating 100 and two classrooms seating 30 each, and a department reading-room and library, there are two general laboratory rooms, covering 3200 square feet. Accessible to these are supply, battery, workshop, balance and chemical rooms. There are also eight smaller rooms specially adapted for physical research, each provided with water, gas, and electricity, and each basement laboratory room has a stone pier, to bed-rock, giving instrument supports free from vibrations of the building. Heavy electrical currents are so numerous and so planned that to almost any laboratory room all electrical currents from the dynamo station may be delivered. A sixty-cell storage battery is continually charged for laboratory work. The building is constructed without iron below the third story, to lessen magnetic disturbances. The general apparatus room contains now about $30,000 worth of demonstration and laboratory instruments. The building is heated by the Sturtevant forced-draft system, regulated by electric thermostats in each room. The air is changed automatically every fifteen minutes and in the lecture-room every ten minutes. The total amount of floor space for research purposes is 5690 square feet. The building is named for Professor Lucien Ira Blake.

**Fowler Shops.** This building was completed in 1899, at a cost of $21,000, and is the gift of Mr. George A. Fowler, of Kansas City, Mo., as a memorial of his father. It is devoted to the mechanical and technical instruction of the School of Engineering and to the electric-light and power plants of the University. Its present educational equipment represents about $30,000, appropriated by the legislature. The building is of native stone, 224 feet long by 50 feet average width, two stories high, with attic and a handsome tower. It encloses 32,000 square feet of floor space for instructional purposes. It contains boiler- and engine-rooms equipped and adapted for boiler and engine testing, with generators aggregating 200 horse-power, for lighting and power for all the University buildings; forge room, metal- and wood-working departments, dynamo and transformer laboratory, fitted with recent types of appropriate machines, so distributed as to give comprehensive and exact technical instruction. Two rooms, 50 by 30 feet, are devoted to the engineering laboratories of the civil and mechanical departments. The pumping machinery of the water and fire-protection system of the University is also placed in the engine-room.

**The Chemistry and Pharmacy Building.** This building was completed in 1900 at a cost of $70,000. The material used is native limestone, laid in horizontal courses, with recessed pointing. The

building is arranged specifically for laboratory purposes for the departments of chemistry and pharmacy. The entire length of the building is 187 feet, and the greatest width 70 feet. The ground plan shows a central portion (devoted to offices, private laboratories, supply-rooms, balance-rooms, and smaller recitation-rooms) and two wings. The building is three stories in height, with a basement of the same height as each of the stories above; beneath the basement floor there is an air space of four feet, down to the solid rock on which the foundations are laid. The system of heating and ventilation, which has been arranged with special care, includes a fan blower, run by electric power, which forces tempered air over steam coils and thence into the laboratories and lecture-rooms. The air thus brought into the rooms is carried out by hoods on the sides of the rooms, which are connected with nine-inch tiles, terminating in the chimneys above the roof, each hood being ventilated by an independent flue.

**The Natural History Museum Building.** The spacious building for the museum of natural history, which has been erected at a cost of $75,000, furnishes a safe and beautiful home for the natural-history collections, estimated to be worth $300,000. The upper floor is devoted to the collections in entomology and paleontology. The remainder of the building is used for the exhibition of mammals and birds. The offices are occupied by the curator of mammals, birds, and fishes, and the curator of the entomological collections. The workrooms of the taxidermist are in the basement.

**Green Hall.** This building, erected at a cost of $65,000, was occupied by the School of Law in the fall of 1905. It is named for Dean James Woods Green. The design is a clean composition in the American renaissance. The central figure, which is also the main approach, is in the form of a portico, having fluted columns enriched with Ionic capitals. These, together with the columns, cornice, and other ornamental parts, are of gray terra-cotta. The body of the structure is of gray pressed brick. The general dimensions of the building are 60 x 120 feet. Entering the building through the front vestibule, which is paved, a few broad steps lead to the main floor, while on either side are ample stairways leading to the basement. On this floor are a large lecture-room, trial-court and study-rooms, toilet- and cloak-rooms. On the next floor are large classrooms, the offices of the Dean and members of the Faculty, and additional cloak-rooms. The second story, which is reached by broad stairways, is practically given over to the library and reading-room, which is about 40 x 116 feet, with a high coved ceiling, giving a free story of nearly twenty-two feet. Adjoining this room, and,

in part, directly connected with it, are small study-rooms and private offices. The interior finish of the building above the basement is of quarter-sawed oak, with paneled wainscot in the halls and up the stairs.

**Auditorium-Gymnasium Building.** The legislature of 1905 appropriated $100,000 for a building for a gymnasium and auditorium. The work of construction has begun. Plans have been accepted for a building 178 feet long by 144 feet wide, with an average width of 90 feet, three stories, including the basement. The basement will be arranged for locker-rooms, baths, dressing-rooms for the athletic teams, a baseball cage, and a swimming pool. The first story will contain a gymnasium floor for men and another for women, a trophy- and reception-room, and offices for the directors of the work for men and women, respectively. A running track will be built in the gallery which will be placed entirely around this floor. The second story will contain a clear floor space 70 x 127 feet. When the apparatus is removed, this floor will be used for auditorium purposes, and will seat 3000 people. Around this auditorium, and opening out from it, will be rooms for handball, boxing, wrestling, fencing, a room for special classes, and a Faculty room. The arrangement and equipment of this building will be modern in every particular. It will be one of the finest gymnasiums in the West.

**The Eleanor Taylor Bell Memorial Hospital** is the collective term applied to the group of buildings now being erected on the property donated to the University by Dr. Simeon B. Bell, of Rosedale, and named in memory of his wife. The medical pavilion is completed. This consists of a two-story brick building, containing beds for twenty-four medical patients, and a hydro-therapeutic and massage department. There are four single rooms, two small wards, and one large ward. The building has a large convalescents' room, and roomy porches looking out over the Turkey Creek valley and toward Kansas City, Kan. The situation is elevated and pleasant, an ideal home for the sick.

**The New Clinical Laboratory** building, which will form an intrinsic part of the Eleanor Taylor Bell Memorial Hospital, will be a brick building 50 x 100 feet, of three stories. It will have concrete floors and a general fire-proof construction. The teaching laboratory will be a room 100 x 30 feet. From this will open four small work-rooms for instructors. There will be three lecture-rooms, a library, offices for the Dean and Superintendent, and also a morgue and an animal room. This building will crown the hill, and will be surrounded by five or six hospital pavilions, similar to the medical pavilion already built.

# University Exercises and Organizations.

## University Alumni Association.

**The Alumni Association** is composed of all persons holding degrees granted by the University, though active membership is limited to those who pay annual dues. An endowment membership is maintained for those who subscribe to the endowment fund. The control of the affairs of the association is in the hands of a board of ten directors. A general secretary is employed, whose office is at the University, and who has charge of the publications of the association, and keeps, so far as possible, a complete record of facts concerning alumni. He also superintends the printing plant owned by the association, from which is issued the *Graduate Magazine*. This magazine is sent to all active members of the association. The regular meetings of the association occur during commencement week of each year, at which time the annual alumni address is delivered at the University by some one from among the alumni.

### Officers of the Alumni Association.

SHEFFIELD INGALLS, '95, Atchison.....*President.*
LULA RENN, '01, Lawrence.....*Vice-president.*
L. N. FLINT, '97, Lawrence.....*Secretary.*
GEO. O. FOSTER, '01, Lawrence.....*Treasurer.*

DIRECTORS.

J. W. Gleed, '79, *President;* Olin Templin, '86; Frank Mac Lennan, '75; R. D. O'Leary, '93; Rose Morgan, '94; Clyde Miller, '96, *l* '97; Wilbur Gardner, '95, *l* '96; Cora Pierson Hopkins, '84; Hannah Oliver, '74; W. F. Bowen, *p* '95.

## Religious.

**Chapel Exercises.** Exercises are held in the University chapel every morning from 10 to 10:15. Though attendance is not required of students, all are cordially invited, and the services are made as attractive and profitable as possible. They consist of the doxology, Scripture reading, prayer, a hymn, and occasional addresses by the

Chancellor and others. On Friday morning the chapel exercises are held from 10 to 10:30, at which addresses are given by speakers from abroad or by members of the Faculty of the University. During the academic year of 1905–'06, to April 1, addresses were delivered by Chancellor Frank Strong, Dean James W. Green, Gen. W. S. Metcalf, Hon. Victor Murdock, Miss Ruth Paxton, Prof. John R. Commons, Hon. P. P. Campbell, Prof. Paul H. Grumman, Pres. Raymond Schwegler, Dr. Jacob E. Reighard, Dr. Victor C. Vaughan, Pres. Ernest F. Pihlblad, Hon. C. C. Coleman, Hon. Scott Hopkins, Hon. Edwin Taylor, Prof. Paul Shorey, Hon. T. M. Potter, Prof. Edward G. Bourne, Hon. Thomas A. McNeal, Prof. F. H. Hodder, Hon. J. W. Creech, editors of the *Kansan*, Prof. A. M. Tozzer, Pres. James D. Moffat, Hon. Ewing Herbert, Prof. W. H. Carruth, and Dr. Newell Dwight Hillis.

On Tuesday mornings addresses were delivered by the following members of the University Faculty: Profs. J. E. Boodin, W. C. Stevens, A. T. Walker, C. M. Harger, A. S. Olin, M. A. Barber, E. M. Hopkins, C. S. Skilton, A. M. Wilcox, Bruce V. Hill, R. D. O'Leary, and H. P. Cady.

**University Vesper Service.** On the last Sunday afternoon of each month students and Faculty join in an hour of quiet devotion. The service is largely musical, with a brief address, a simple and vital talk on one of the great questions of life. The music, aside from the congregational singing, is furnished by the Vesper Chorus, conducted by Professor Hubach. The speakers for the past year have been: Prof. John E. Boodin, Rev. W. W. Bolt, Chancellor Frank Strong, Rev. W. B. Hutchinson, Rev. F. A. Wilber, Prof. W. H. Carruth, and Pres. James D. Moffat.

**Young Men's Christian Association.** The Young Men's Christian Association is an organization composed of 265 Christian men of the University, banded together for the purpose of preserving and advancing the spiritual interests of the institution. This object is attained through the work of the various departments, and through the helpful Christian fellowship of the young men in their intercourse with one another. Religious services, to which all the men of the University are cordially invited, are held every Sunday afternoon at the Christian church, corner of Kentucky and Quincy streets, and midweek prayer-meetings are held every Thursday evening for a half-hour after supper. The Sunday afternoon services are rendered especially interesting by the presence of prominent speakers from various parts of the state.

The Bible study department organizes classes in systematic Bible study, under competent instructors, and offers courses of

study in the life of Christ, the Apostolic church, the Old Testament, and mission study. During the present year thirteen such classes have been maintained, with 130 men enrolled. Three of these classes are conducted by Prof. W. C. Payne and Dr. F. A. Wilber.

The organization leases a large house, which is the center of association life, and affords excellent opportunities for the work of the social committee. Besides the large public receptions at the opening of each term, this committee arranges for a series of socials, reaching different classes of men in their turn; while the parlors of the house, furnished with a piano and games, are open to the men of the University at all times. The association employes a general secretary, who devotes all his time to association work.

Members of the association meet students at the trains and assist them in finding rooms and boarding-places. The employment bureau will render all assistance possible to students desiring to earn a part of their expenses. There will be sent to any address, on application, a handbook giving valuable information to prospective students. Address the general secretary of the association.

**Young Women's Christian Association.** The Young Women's Christian Association is an organization composed of 225 young women of the University, united for the attainment of the most perfect development of Christian character among the young women of the institution. The work of the association is divided into ten departments, each in charge of a permanently organized committee. The midweek religious services of the association are arranged by the devotional committee, which provides able speakers upon subjects of practical interest and value to young women. The missionary committee conducts three classes in the study of missions, and the association, through this committee, assists materially in the support of one of its former members as a Y. W. C. A. secretary in India. There are also eighteen classes in systematic Bible study, pursuing courses in the life of Christ, in Old Testament history, and in Acts and the Epistles.

The association seeks to develop the social as well as the spiritual life of its members. The social committee therefore holds a prominent place in the association work. Receptions to new students are held at the opening of the fall term, and are followed by numerous social gatherings throughout the year, at the Y. W. C. A. house. The association employs a general secretary, who gives all of her time to work among the young women.

The members of the association gladly assist young women just entering the University in securing boarding- and rooming-places, and, when desired, employment. The students' handbook, which is published in conjunction with the Young Men's Christian Association, will be sent to any address upon application to Miss Ola Bingler, 1319 Tennessee street, Lawrence, Kan.

**University Religious and Philosophical Union.** This association, recently formed, aims to unite students and Faculty of all shades of religious belief into one body for the study, discussion and practical working out of religious and philosophical problems. It holds meetings twice a month.

**Relation to City Churches.** The churches of Lawrence unite in extending to the University students a cordial invitation to enter with them into Christian fellowship, and endeavor to make them feel that, irrespective of church membership, they are welcome to all the privileges which the church affords. To this end the various churches hold receptions for the students at the beginning of each year, the pastors preach special sermons to the students from time to time, and the young people's societies arrange for social gatherings to which the students are especially invited. There are also organized, in the principal Sunday-schools of the city, special classes for University students, a number of these classes being in charge of University professors.

By these means the students are brought closely in touch with the religious life of Lawrence, which may well be called a city of churches. A religious census of the student body during the past few years shows that an average of eighty-seven per cent. of the students are church adherents, fifty-six per cent. are church members, and a large number are actively engaged in the work of the various churches and organizations connected therewith throughout the city.

**The Bible Chair.** April 1, 1901, the Woman's Board of Missions of the Christian church established a chair of biblical instruction at Lawrence for the benefit of University students. A site was purchased on Mount Oread, adjoining the University campus, where, in the residence of the instructor, the work is carried on. The plans for a hall especially adapted to the growing needs of the Bible chair have been drawn. The work of building will begin about April 1, 1906.

There is no organic relation between the Bible chair and University. Its support rests entirely upon private gifts. No fees are charged. The privileges are offered to all students, without

regard to their religious affiliations, and the courses are arranged to meet their convenience.

The instruction is non-sectarian. The purpose of the work is to bring students in touch with the book which more than any other has made civilization, and which bears the message best adapted to meet man's moral and spiritual needs.

The courses include studies in both the Old and New Testaments, and the history of missions. The Hebrew language is offered to such as are interested or who are preparing for the ministry. Wallace C. Payne, A. B., A. M., (Bethany College), B. D., (Yale University), and graduate student of the University of Chicago, occupies the chair. Mrs. W. C. Payne is associated with him.

During the five years now closing, about 900 students have taken advantage of the opportunity thus given to acquaint themselves more fully with the Bible.

Beginning October 1, 1906, studies will be offered by Professor Payne in the "Life of Christ," "Paul's Life and Letters," "Peter's Life and Writings," and "Old Testament History." Short courses of three to eight lectures will be given on "Israel and the Great Nations of the Past," "The Wisdom Literature of the Old Testament," "The Psalms," "The Old Testament Prophets," "The Man, Christ Jesus," "The Teaching of Jesus," "The First Century Church," "The Writings of John," and "The Growth of the English Bible."

Mrs. W. C. Payne will lecture upon "The Women of the Bible," "The History of Missions," "The Lives of Great Missionaries," and "The Miracles and Parables of Jesus."

In addition to the studies given at the lecture-room, 1300 Oread avenue, during the school year 1906–'07, special attention will be given group classes for Bible study in private, fraternity and sorority houses.

Any one desirous of further information may address Rev. W. C. Payne, 1300 Oread avenue, Lawrence, Kan.

**Westminster House.** This institution has been established by the Presbyterians of Kansas to afford the advantages of religious instruction, pastoral care and the atmosphere of a Christian home to their young people attending the University of Kansas. It was opened at the beginning of the present academic year, under the charge of Rev. Francis Allen Wilber, D. D., as principal, assisted by Mrs. Wilber. It has no organic connection with the University.

While denominational in its organization and control, this institution exerts no sectarian influence, but opens its classes and social features to all alike. No fees are charged and all are welcome.

Courses of study are offered in "Old Testament History," "Messianic Prophecy," "The Life of Christ," "The Teaching of Jesus," "Apostolic History and Literature," "History of the English Bible," "Modern Missions as Related to the World Movements of To-day," and a "Students' Round Table" for the discussion of current topics and subjects bearing upon university life. The following courses will be offered to special classes: "Pedagogy as Applied to Bible Teaching," "The History and Art of Hymnology," and "Beacon Lights of Church History."

The purpose of these courses is to offer to students of the University the advantages of thorough instruction in those branches of study which are distinctive features of the curriculum in denominational colleges. It is the intention to maintain the standard of instruction upon a par with that of the departments of the University, and to promote, by personal acquaintance and sympathetic hospitality, that effective pastoral care which was contemplated by the founders of Westminster House.

During the year 156 students have been enrolled in classes, some of which are held at Westminster House, and others at boarding-houses or the homes of fraternities and sororities.

All correspondence in regard to courses of study or pastoral matters should be addressed to Rev. Francis A. Wilber, Westminster House, 1125 Tennessee street, Lawrence, Kan.

## Social and Literary.

**Association of the Ladies of the Faculty.** The women connected with the University as instructors and the wives of instructors form an association whose purpose is to promote the moral and social welfare of the students, and to further an acquaintance between themselves and the students. To this end, besides general receptions and gatherings for the discussion of questions of common interest, twice a month, on Fridays, the Ladies of the Faculty give an afternoon tea for the young women of the University. A committee of the association meets the young women at the University during the opening week of the year, and assists them in finding suitable boarding- and rooming-places. Students are always cordially welcome in the homes of the Faculty.

**The Phi Beta Kappa Society.** The Kansas Alpha chapter of this society was organized in April, 1890. The object of the society is, primarily, the promotion of scholarship in the University. To this end, a portion of the members of the graduating class of the College, never to exceed one-fourth, who have made high rec-

ords for scholarship in their University studies, are elected to membership.

**The University Association.** This is an organization of students and alumni for the purpose of promoting University spirit and advancing the interests of the University in any possible manner.

**Literary Societies.** There are four of these: The Snow, the Senate, the X Y Z, and the Adelphic. The objects which they are intended to promote are to cultivate literary taste and the spirit of sound criticism, to develop the necessary qualities of public speaking, and to learn the methods and rules of legislative bodies. The students of the School of Law maintain two debating societies, the Kent Club and the Cooley Club.

**German Club.** All students in the German department are eligible to membership in the German Club, which meets once a week in the German recitation-room. The object of the club is to furnish the student special opportunity to familiarize himself with the spoken language and to promote an interest in all that is German. Musical and literary programs are rendered each week by students, and the meetings are conducted exclusively in German. There are besides this club several smaller conversational circles, presided over by the instructors in the department. A special feature in connection with the club is the German play, which is given each year by the students of the department.

**The Quill Club.** An organization of students and instructors especially interested in English composition, which meets to hear and discuss original productions presented by members and others.

**French Club.** The instructors and students in the French department compose the *Cercle français*, which meets once a week to present a brief literary program, reviews of articles in the leading French magazines, and reports on French topics. French only is used, as one of the chief objects of the club is to provide better opportunities than can be offered in the classroom for the practice of the spoken language. Another opportunity for such practice is found in the French play, which is given towards the close of the year by the students of the department.

## Scientific.

**The Sigma Xi Society.** The Iota chapter of this scientific honorary society was established at the University in 1890. The society confers the honor of election to membership upon students who have shown special aptitude along scientific lines, especially with regard to research work. This chapter holds monthly meetings for the reading and discussion of scientific papers, and is the center about which the scientific interests of the University are gathered.

**Biological Clubs.** The instructors and students in each of the biological departments meet weekly, in separate clubs, for the discussion of matters relating to their respective branches of biological science.

**Chemical Club.** This is composed of the instructors and advanced students in the departments of chemistry and pharmacy. It holds weekly meetings, at which the following are presented: Reports on research work by instructors and students; reports on scientific meetings and associations; reviews of new books and important articles in chemical journals; notices of important inventions and new chemical processes.

## Debating and Dramatic.

**Debating Council.** The council is made up of representatives chosen from the literary societies of the University, and under its supervision are held all preliminary and interstate debates. At present, annual debates are held with the Universities of Iowa and Missouri.

**Dramatic Club.** The students of the University maintain a Dramatic Club for the study and presentation of modern plays. Membership in the club is open to all students, and is secured by dramatic trials held at the beginning of the first term.

## Musical.

**Orchestra.** Young men and women of the University form an Orchestra each year to furnish music for the chapel, commencement, and special convocations. The Orchestra has been reorganized and enlarged, and is under the direction of the Dean of the School of Fine Arts. Semiannual concerts are given.

**Men's Glee Club.** The Men's Glee Club has been reorganized and placed upon a stable foundation. It is under the direc-

tion of the head of the department of voice training of the School of Fine Arts. The general control of the club, as to financial obligations and tours, is in the hands of a committee of the University Council. The semiannual concerts, given in December and May, are important University events. A tour of the state is made during the Christmas vacation.

**Vesper Chorus.** The Vesper Chorus is composed of about thirty of the leading singers of the city and Universty, and takes part in the monthly vesper services. It is under the direction of the professor of voice training.

**Band.** A band is formed each year, under a competent leader, among the young men of the University. It furnishes music at the various athletic contests held at the University and for other student gatherings.

**The Lawrence Choral Union.** The Choral Union is composed of musical people of Lawrence and students of the University, mainly from the clubs named above. The director is the Dean of the School of Fine Arts. The Choral Union undertakes chorus work of importance, especially the chorus work for the annual spring music festival at Lawrence.

**The Mandolin Club.** This club is organized for the purpose of combining the musical elements of the University interested in the mandolin, guitar, and banjo. The leader is appointed by the Dean of the School of Fine Arts. This club gives semiannual concerts and makes a tour of the state.

## University Concerts, Addresses, and Art Exhibitions.

### Concerts.

OCTOBER, 1905. Concert by the Fine Arts Faculty.

NOVEMBER, 1905. Piano recital, by Edward Baxter Perry.

DECEMBER, 1905. Annual Christmas concert, by students of the School of Fine Arts.

DECEMBER, 1905. Piano recital, by Harold Henry.

DECEMBER, 1905. Annual winter concert, by the University Orchestra.

DECEMBER, 1905. Annual winter concert, by the University Mandolin Club.

JANUARY, 1906. Organ recital, by Prof. Charles S. Skilton.

FEBRUARY, 1906. Annual winter concert, by the University Glee Club.

FEBRUARY, 1906. Piano recital, by Mary Hallock Greenewalt.

MARCH, 1906. First chamber music concert by the Fine Arts Faculty.

MARCH, 1906. Piano recital by W. Waugh Lander.

MARCH, 1906. Annual performance of opera, Weber's "Der Freischütz."

APRIL, 1906. Third annual music festival—three concerts: First, April 6, by the Fine Arts Faculty, University Orchestra, and Festival Chorus; second, April 7 (afternoon), by the Innes Orchestral Band; third, April 7 (evening), by the Innes Band and the Festival Chorus.

APRIL, 1906. Second chamber music recital.

MAY, 1906. Third chamber music recital.

MAY, 1906. Annual spring concert of the University Mandolin Club.

MAY, 1906. Annual spring concert of the University Glee Club.

JUNE, 1906. Graduating recitals.

JUNE, 1906. Annual commencement concert, by students of the School of Fine Arts.

**Addresses.**

The following University addresses were delivered at the University during the academic year 1905–'06; all University students were admitted to these addresses without charge:

JUNE 4, 1905. Baccalaureate sermon, Dr. Samuel A. Eliot, of Boston, Mass.

JUNE 5, 1905. Phi Beta Kappa address, Chancellor James H. Kirkland, of Vanderbilt University.

JUNE 6, 1905. Alumni address, Hon. Philip C. Young (class of '82).

JUNE 7, 1905. Commencement address, Hon. Charles F. Scott.

SEPTEMBER 8, 1905. Opening address, Hon. W. R. Stubbs.

OCTOBER 20, 1905. Professor Billings, University of Louisiana. Subject: "Some Plant Adaptations."

NOVEMBER 16, 1905. Dr. J. H. Reighard, University of Michigan. Subject: "The Habits of Fishes."

NOVEMBER 24, 1905. Dr. Victor C. Vaughan, University of Michigan. Subject: "Immunity."

DECEMBER 8, 1905. Prof. Walter Dennison, University of Michigan. Subject: "Roman Portraiture, with Special Reference to Scipio Africanus."

JANUARY 19, 1906. Prof. Paul Shorey, of the University of Chicago. Subject: "The Pace that Killed Athens."

JANUARY 27, 1906. Prof. Otto Nordenskjöld, of University of Upsala, Sweden. Subject: "Antarctica."

FEBRUARY 9, 1906. Prof. Edward G. Bourne, of Yale University. Subject: "The Romance of the Southwest."

FEBRUARY 10, 1906. Prof. Francis W. Kelsey, of the University of Michigan. Subject: "Pompeii and St. Pierre."

MARCH 16, 1906. Dr. A. M. Tozzer, of Harvard University. Subject: "Some Aspects of Archæological Work in Central America."

MARCH 23, 1906. Pres. James D. Moffat, of Washington and Jefferson College. Subject: "Modern Science and the Christian Religion."

### Art Exhibition.

An annual exhibition of works of art will be held at the University, together with a course of lectures upon subjects related to the fine arts. During the present year the exhibition consisted of 375 paintings by J. James Tissot—illustrating the Old Testament—which was open from November 22 to December 13. At the close of the year there is held an exhibition of work done by pupils of the department of drawing and painting.

### Athletic.

**Athletic Association.** This association is organized to encourage and promote the physical education and hygienic training of matriculates and graduates of the University of Kansas, and to foster and supervise athletic games, to wit, baseball, boating, football, tennis, track athletics, basket-ball, and other innocent sports, in connection with the University. Membership in the association is open to all students, graduates, officials, and members of the Faculty.

**The Country Club** is one of the oldest University organizations. Its object is to take the students on tramps into the country surrounding Lawrence, studying the historical events associated with the vicinity and natural objects in their own realm.

**The Golf Club** has its links on the University grounds. It is a self-supporting, independent organization, and membership is open to students of the University.

**General Athletics.** The general athletics of the University include football, baseball, basket-ball, tennis, and other forms of exercise.

**Intercollegiate Games** are held as often as deemed best, for the encouragement of *esprit de corps* among the students and a friendly rivalry between sister universities.

**Control.** All forms of exercise, athletics and games are under the control of the director of the gymnasium and his assistants. Competitive games and athletics are encouraged to the extent of inspiring the student to develop his physical condition, but not to the extent of interfering with his studies.

**The Athletic Board.** All intercollegiate athletic contests are under the control of the University Athletic Board, composed of four students elected by the students, four Faculty members elected by the University Council, the Chancellor of the University, the president of the Athletic Association, and the professor of physical education. The last three are *ex officio* members.

**Rules.** The University Council has adopted rules governing the standing of all those who represent the University in athletic contests. Good scholarship and gentlemanly conduct are required of all such contestants. The rules of the Chicago conference, supplemented by the Topeka conference, govern in every case.

### University Publications.

**The University of Kansas Science Bulletin,** formerly the *Kansas University Quarterly,* is maintained by the University as the medium for the publication of the results of original research by members of the University. Papers are published in it only on recommendation of the committee of publication, which committee is composed of five members of the scientific faculty. Formerly the *Quarterly* was issued at regular intervals, as indicated by the title, but numbers of the present series appear without regard to specific dates. A volume consists of about 400 pages, with the necessary illustrations. The price of subscription is three dollars a volume. Individual numbers vary in price with the cost of publication. The current volume of the present year is volume III; continuous series, volume XIII. Exchanges with similar publications of other colleges or universities and learned societies are solicited. H. B. Newson is corresponding secretary. Communications should be addressed to him.

**The University News Bulletin** is issued weekly from the Registrar's office, for the purpose of furnishing the newspapers, high-school students and others of the state items of interest regarding

University affairs. It will be sent regularly, without charge, to any one who may express a desire to receive it.

**The Graduate Magazine** is published monthly during the academic year by the Alumni Association of the University. Each volume contains the formal University addresses of the year and articles on subjects related to the University. Departments containing news matter of interest to alumni and former students are included in each number.

**The Kansan** is a newspaper published twice a week by student representatives from the various schools of the University.

**The Jayhawker** is the annual published each year by the Senior classes of the schools of the University.

**The Kansas University Lawyer** is published monthly by the students of the School of Law, and is devoted to the interests of that school.

**The University Geological Survey Reports** are issued from time to time as material for them is gathered.

### Lectures Offered to Kansas Communities.

In order that as many people of the state as possible may receive some immediate benefit from the University as an institution established for the dissemination of learning, a large number of lectures are offered to Kansas communities by the Faculty of the University. For these lectures no fixed charges are made beyond the actual expenses of the lecturers, when the lectures are for high-school and educational purposes and free to the public; but when admission is charged the lecturer will require a fee of five dollars, besides expenses. For experimental lectures, or those illustrated with lantern slides, an additional fee of five dollars may be charged. These lectures are suitable for delivery under the auspices of high schools, educational, literary or religious societies.

### Concerts Offered to Kansas Communities.

The School of Fine Arts is prepared to furnish soloists to take part in concerts, music festivals, or public celebrations, or to give entire recital programs by members of the music and dramatic faculty and the University musical organizations. The following artists may be secured: Dean Charles S. Skilton, organ and lecture recitals; Prof. Carl A. Preyer, piano; Prof. C. Edward Hubach, tenor; Mrs. Blanche Lyons, soprano; Miss Helen Phipps, violin; Prof. Edgar G. Frazier, dramatic reader; also the University Orchestra of twenty pieces, the University Glee Club, the University Mandolin Club. Address the Dean of the School of Fine Arts.

**Recommendation of Teachers.**

The University endeavors to assist those of its graduates who desire to teach in securing positions, and at the same time to be of service to high schools, academies and colleges which may be in need of competent instructors. To this end a committee of the Faculty preserves a complete list and record of graduates who are engaged in teaching or have fitted themselves especially for such work. The University authorities are thus prepared at any time to recommend persons who are well qualified for any position that may be made vacant. In so doing, great care is exercised, the special qualifications of various teachers for the particular position in hand being in every case fully considered.

# PART III.

# Departments of Instruction.

# I. The Graduate School.

## Faculty.

FRANK STRONG, Ph. D., President.

FRANK W. BLACKMAR, Ph. D., Dean, and Professor of Sociology and Economics.

FRANCIS H. SNOW, Ph. D., Professor of Organic Evolution and Systematic Entomology.

EPHRAIM MILLER, Ph. D., Professor of Mathematics and Astronomy.

WILLIAM H. CARRUTH, Ph. D., Professor of Germanic Languages and Literatures.

FRANK O. MARVIN, A. M., Professor of Civil Engineering.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

ALEXANDER M. WILCOX, Ph. D., Professor of Greek Language and Literature.

LUCIUS E. SAYRE, Ph. M., Professor of Pharmacy.

LUCIEN I. BLAKE, Ph. D., Professor of Physics and Electrical Engineering.

LEWIS L. DYCHE, M. S., Professor of Systematic Zoölogy.

CHARLES G. DUNLAP, Litt. D., Professor of English Literature.

OLIN TEMPLIN, A. M., Professor of Philosophy.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

FRANK H. HODDER, Ph. M., Professor of American History and Political Science.

ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.

ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.

WILLIAM C. STEVENS, M. S., Professor of Botany.

ARVIN S. OLIN, A. M., Professor of Education.

EUGÈNIE GALLOO, A. M., Professor of Romance Languages and Literatures.

WILBUR C. ABBOTT, B. Litt., Professor of European History.

CHARLES S. SKILTON, A. B., Professor of Musical Theory, History of the Fine Arts, and Organ.

JOHN E. BOODIN, Ph. D., Professor of Philosophy.

HENRY B. NEWSON, Ph. D., Professor of Mathematics.

IDA H. HYDE, Ph. D., Professor of Physiology.

WILLIAM H. JOHNSON, A. M., Professor of Education.

GEORGE H. HOXIE, Professor of Internal Medicine.

BRUCE V. HILL, Acting Professor of Physics and Electrical Engineering.

JAMES NAISMITH, M. D., Associate Professor of Physical Education.

MARSHALL A. BARBER, A. M., Associate Professor of Cryptogamic Botany and Bacteriology.

SAMUEL J. HUNTER, A. M., Associate Professor of Entomology.

MILES W. STERLING, A. M., Associate Professor of Greek.

RAPHAEL D. O'LEARY, A. B., Associate Professor of English Language.

CLARENCE E. MCCLUNG, Ph. D., Associate Professor of Zoölogy.

HANNAH OLIVER, A. M., Associate Professor of Latin.

ELMER F. ENGEL, A. M., Associate Professor of German.

MERVIN T. SUDLER, Ph. D., M. D., Associate Professor of Anatomy.

SAMUEL C. EMLEY, A. B., M. D., Associate Professor of Pathology.

HAMILTON P. CADY, Ph. D., Associate Professor of Chemistry.

EDGAR G. FRAZIER, Ph. B., Associate Professor of Public Speaking and Debate.

SELDEN L. WHITCOMB, A. M., Associate Professor of English Literature.

PERLEY F. WALKER, M. M. E., Associate Professor of Mechanical Engineering.

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**Administrative Committee.**

FRANK W. BLACKMAR.....*Dean.*

| | |
|---|---|
| FRANK H. HODDER. | WILLIAM H. CARRUTH. |
| FRANK O. MARVIN, | EDGAR H. S. BAILEY. |

# The Graduate School.

## Purposes of the School.

THE Graduate School provides all the instruction in advanced subjects offered in the University. It is under the direction of the faculty and administrative committee of the Graduate School, the Dean of the Graduate School being chairman of the administrative committee.

It was organized in 1896, mainly out of the College of Liberal Arts and Sciences and the School of Engineering, and the most of the work offered by the Graduate School is given in connection with the several departments of these schools.

It is the business of the faculty of the Graduate School to formulate courses in graduate work; to establish and maintain the requirements for all higher degrees offered by this University; to make recommendations for those degrees to the Board of Regents; and to fix such regulations as they may deem expedient for the government of the school.

### Requirements for Admission.

Admission to the Graduate School ordinarily is granted to graduates of this University holding the bachelor's degree, and to graduates of other colleges and universities of good standing on presentation of proper evidence of scholarship and testimonials of good character.

### Rules for Graduate Work.

Graduate students, whether candidates for a degree or not, must be in regular attendance on such course or courses as may have been selected and approved, and will be required to pass all examinations, or to submit to such other regulations and requirements as may be imposed by the heads of the departments concerned. Graduate students who pursue their work in part elsewhere must conform to the requirements imposed in each case by the administrative committee.

### Registration.

When it is ascertained in what department the student desires to do his major work, the Dean will refer him to the head of that department, who will select the courses, after consultation with

the student. The student will then submit the courses to the Dean, and if approved the applicant will be given a card permitting him to register in the office of the Registrar. Work to be counted as graduate work is specified in the catalogue, and must be designated as graduate on the enrolment card filed in the Registrar's office.

## Degrees Granted.

The University offers eight advanced degrees, viz.:

| | |
|---|---|
| Master of Arts. | Mechanical Engineer. |
| Master of Science. | Mining Engineer. |
| Electrical Engineer. | Chemical Engineer. |
| Civil Engineer. | Doctor of Philosophy. |

### Master of Arts and Master of Science.

The master's degree will be granted only after at least one full year's graduate work. One year of residence at the University is required for the master's degree. Time spent in undergraduate work may be counted in satisfying this rule. The candidate must have completed with high credit thirty hours of work chosen from the courses open to graduates; other courses may be offered only by the special consent of the departments concerned and of the administrative committee; but courses for which a professional certificate or diploma is given will not be counted toward this degree. Not more than fifteen hours' credit can be given in one term.

The degree of master of arts will be granted to bachelors of arts, and the degree of master of science to graduates in engineering. Students who have had special preparation in scientific studies and whose graduate work is in scientific departments may, upon recommendation of the administrative committee, receive the degree of master of science.

When the candidate is first permitted to enroll as a graduate student, he shall select the department in which his major work is to be done. The head of that department will, in consultation with the candidate, select the courses to be taken for the ensuing term. These may be confined to the department of his major study, or may be selected from that and not more than two other departments. The decision of the head of the department shall be subject to the veto of the Dean of the Graduate School; appeal may be made from the decision of the Dean to the Graduate Faculty. If the student subsequently changes his selection of a major department, the graduate work already done shall not be counted

toward the master's degree unless approved by the head of his new major department.

Not later than the 15th of May preceding the commencement at which the degree is to be conferred, he must present to the head of the department in which his chief study has been a thesis which must embody some scholarly research on some topic connected with that study. The thesis shall be written, either in a clear, legible hand or typewritten, on bond paper of twenty pounds' weight to the ream; the paper to be cut to the size of eight inches by ten inches. One and one-half inches margin must be left on the left side of the paper, for convenience in binding.

Not more than five hours of graduate work may be done *in absentia* in candidacy for the master's degree, and this only in case of student's completing the work for the degree. The term *in absentia* applies to work not done in colleges and universities.

### Engineering Degrees.

Graduates in engineering in this University, and masters of science who have received their degrees through the Graduate Faculty, are eligible to the professional degrees of civil engineer, electrical engineer, mechanical engineer, mining engineer, or chemical engineer, whichever is appropriate to the undergraduate course taken. Candidates for these degrees must have spent at least three years' actual time in professional practice, in positions of responsibility, in the design, construction or operation of engineering works, and must furnish detailed and satisfactory evidence as to the nature and extent of this practice.

They must submit an engineering thesis, accompanied by detailed explanations, drawings, specifications, estimates, etc., and embodying the results of their own work or observation. If approved, the thesis and all accompanying material shall be the property of the University.

All theses for any professional degee must be delivered to the Dean of the School of Engineering on or before the 15th day of May.

### Doctor of Philosophy.

The degree of doctor of philosophy will be granted on the ground of advanced scholarship, and the performance of independent work in some special line under the following conditions:

1. The candidate must be a baccalaureate graduate of this University or of some other college or university of good standing; or he must give satisfactory evidence to the faculty of the Graduate

School that he possesses an adequate preparation for graduate work.

2. He must make application to the Dean of the Graduate School before the 1st day of October preceding the commencement at which he intends to present himself for the degree, and must then give satisfactory evidence of his ability to read such German and French as may be necessary for the proper prosecution of his studies.

3. He must have spent at least three full college years in resident graduate work at this or some other approved university; the last year must be spent as a resident student of this University. The time spent in attaining the degree of A. M. may be counted toward satisfying this time condition.

4. He must present a thesis showing the result of original research of a high character, and must pass acceptable examinations, both written and oral, in one chief or major study and two allied, subsidiary or minor studies, not more than two of which may be in the same department. The oral examination shall be before the faculty of the Graduate School, where he may be required to defend his thesis. The thesis, embodying the results of original research in some subject connected with his major study, must be presented to the head of the department in which the work was done not later than the 1st of May preceding the commencement at which the degree is to be conferred, and if approved by him shall be placed on file for inspection in the office of the Dean of the Graduate School for at least two weeks. If finally approved, not less than 100 printed copies must be delivered to the Librarian of the University before receiving the degree, or proper security be given for the printing of that number; provided, that if the thesis has already been printed, ten copies only shall be deposited with the Librarian.

## Fees and Expenses.

According to a recent act of the state legislature, an incidental fee of ten dollars is charged Kansas students of this school. Students who matriculate for the first time pay five dollars additional. For non-residents of the state both these fees are double. A diploma fee of five dollars is required. The other expenses of students differ according to circumstances and the tastes of the student. A full statement is regard to general expenses will be found under the College of Liberal Arts and Sciences, on another page of this catalogue.

## Graduate School Organizations.

**The Graduate Club.**—This is an organization composed of the graduate students of the University, designed especially to bring this class of students, each of whom is largely working independently, into closer touch socially and intellectually.

**Other Organizations.**—Students of the Graduate School are also eligible to membership in other organizations of the University, such as the literary societies, the modern language and science clubs, etc., a full account of which will be found in another part of this catalogue.

## Seminars and Conferences.

The seminars of the Graduate School are also open under certain conditions to undergraduates pursuing advanced work.

**American History.** The seminar in American history meets once a week for research work in some phase of American history.

**European History.** The seminar in European history is held twice a week throughout the year. Some period of European history is selected as the subject of special research.

**History Conference.** A conference of the department of European history and allied departments is held once in two weeks, from January to April.

**German.** The meetings average once in two weeks during the year and advanced work is assigned and reported on.

**Zoology.** The meetings average once in two weeks, and problems in heredity are under consideration during the present year.

**Bacteriology.** The students in bacteriology have special meetings once a week.

**Seminar of Sociology and Economics.** A general conference, open to graduate students, for research work in economics and sociology, meets once each week.

## Seminar Rooms.

**The Spooner Library** is well furnished with facilities for seminar and departmental work. Separate rooms for seminar work are provided in Latin, German, philosophy, English literature and language, mathematics, European and American history. The entire upper floor of the library, outside of the stacks, is given up to the departmental libraries, economics, sociology, American and European history. The seminar work in science is done in the buildings devoted to the work of the separate departments.

## Fellowships.

For the encouragement of advanced study and research, eleven teaching fellowships have been established for graduates of special merit. Each fellowship entitles the holder to $215. Holders of such fellowships are obliged to teach not more than seven hours a week in the respective departments in which they are chosen. The remainder of the time shall be devoted to investigation and research leading to an advanced degree.

These fellowships are awarded to graduates of the University of Kansas, and of other colleges and universities of good standing, who have distinguished themselves for special scholarship and marked ability. Applications for fellowships must be filed, on blanks provided for the same, with the Chancellor of the University, on or before the 15th of May of the collegiate year preceding that during which the fellowship is held. Such application may be accompanied by recommendations from instructors, and original work of the applicant, either published or in manuscript.

The relative merits of applicants shall be considered by a committee composed of the members of the administrative committee of the Graduate School and the heads of the departments in which the fellowships are granted. The committee, after a full consideration of the merits of all applicants, shall nominate the candidates and recommend the same to the Regents for election.

The Board of Regents will determine each year the departments in which fellowships shall be granted. All fellowships will be filled each year. Fellows may be reelected, in special cases, for one additional year only.

For the year 1906–'07 fellowships will be awarded in the following subjects: German, mathematics, education, sociology, Romance languages, English language, chemistry, American history, European history, zoölogy, and philosophy.

## Departments.

The following groups of departments offer graduate work in the University. In some of them the facilities are adequate for thorough training for the doctor's degree. In all of them the facilities are excellent for work leading to the master's degree. See index for headings (enumerated below) on other pages of this catalogue.

1. English Literature and Language.
2. Modern European Languages and Literatures.
3. Classical Languages and Literatures.

4. European and American History.
5. Sociology and Economics.
6. Philosophy and Psychology.
7. Physical Sciences: Physics, chemistry, geology, anatomy, physiology.
8. Biological Sciences: Botany, zoölogy, entomology, organic evolution.
9. Mathematics and Astronomy.
10. Engineering.
11. Education.
12. Physical Education.

**Courses for Graduate Instruction** will be found in detail under courses of instruction for the College of Liberal Arts and Sciences and the School of Engineering.

# II. The College of Liberal Arts and Sciences.

## Faculty.

FRANK STRONG, Ph. D., President.

OLIN TEMPLIN, A. M., Dean. Professor of Philosophy.

GEORGE O. FOSTER, A. B., Secretary.

FRANCIS H. SNOW, Ph. D., Professor of Organic Evolution and Systematic Entomology.

EPHRAIM MILLER, Ph. D., Professor of Mathematics and Astronomy.

WILLIAM H. CARRUTH, Ph. D., Professor of Germanic Languages and Literatures.

FRANK O. MARVIN, A. M., Professor of Civil Engineering.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

ALEXANDER M. WILCOX, Ph. D., Professor of Greek Language and Literature.

LUCIUS E. SAYRE, Ph. D., Professor of Pharmacy.

LUCIEN I. BLAKE,* Ph. D., Professor of Physics and Electrical Engineering.

LEWIS L. DYCHE, M. S. Professor of Systematic Zoölogy.

FRANK W. BLACKMAR, Ph. D., Professor of Sociology and Economics.

CHARLES G. DUNLAP, Litt. D., Professor of English Literature.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

FRANK H. HODDER, Ph. M., Professor of American History and Political Science.

ERASMUS HAWORTH, Ph. D., Professor of Geology and Mineralogy.

ARTHUR T. WALKER, Ph. D., Professor of Latin Language and Literature.

WILLIAM C. STEVENS, M. S., Professor of Botany.

ARVIN S. OLIN, A. M., Professor of Education.

WILLIAM A. GRIFFITH, Professor of Drawing.

EUGÉNIE GALLOO, A. M., Professor of Romance Languages and Literatures.

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*Absent on leave.

WILBUR C. ABBOTT, B. Litt., Professor of European History.

CHARLES S. SKILTON, A. B., Professor of Musical Theory, History of the Fine Arts, and Organ.

JOHN E. BOODIN, Ph. D., Professor of Philosophy.

IDA H. HYDE, Ph. D., Professor of Physiology.

HENRY B. NEWSON, Ph. D., Professor of Mathematics.

WILLIAM H. JOHNSON, A. M., Professor of Education.

BRUCE V. HILL, Ph. D., Acting Professor of Physics and Electrical Engineering.

JAMES NAISMITH, M. D., Associate Professor of Physical Education.

MARSHALL A. BARBER, A. M., Associate Professor of Cryptogamic Botany and Bacteriology.

SAMUEL J. HUNTER, A. M., Associate Professor of Entomology.

MILES W. STERLING, A. M., Associate Professor of Greek.

RAPHAEL D. O'LEARY, A. B., Associate Professor of English.

CLARENCE E. MCCLUNG, Ph. D., Associate Professor of Zoölogy.

HANNAH OLIVER, A. M., Associate Professor of Latin.

ELMER F. ENGEL, A. M., Associate Professor of German.

MERVIN T. SUDLER, Ph. D., Associate Professor of Anatomy.

SELDEN L. WHITCOMB, A. M., Associate Professor of English Literature.

PERLEY F. WALKER, M. E., Associate Professor of Mechanical Engineering.

HAMILTON P. CADY, Ph. D., Associate Professor of Chemistry.

EDGAR G. FRAZIER, Ph. B., Associate Professor of Public Speaking.

CHARLES M. HARGER, Lecturer in Journalism.

MARTIN E. RICE, M. S., Assistant Professor of Physics and Electrical Engineering.

ARCHIBALD HOGG, A. B., Assistant Professor of Philosophy.

RALPH W. CONE, A. M., Assistant Professor of Sociology and Economics.

GEORGE L. LINCOLN,* A. M., Assistant Professor of French.

WILLIAM C. HOAD, B. S., Assistant Professor of Civil Engineering.

ALMA LE DUC, Ph. B., Assistant Professor of French and Spanish.

ALBERTA L. CORBIN, Ph. D., Assistant Professor of German.

JOHN N. VAN DER VRIES, Ph. D., Assistant Professor of Mathematics.

FREDERIC N. RAYMOND,* A. M., Assistant Professor of English.

*Absent on leave, 1905–'06.

MARGARET LYNN, A. M., Assistant Professor of English.

CARL L. BECKER, B. L., Assistant Professor of European History.

FRANK E. BRYANT,* A. M., Assistant Professor of English.

RALPH E. BASSETT, A. M., Assistant Professor of Romance Languages.

DAVID F. MCFARLAND, M. S., Assistant Professor of Chemistry.

ARTHUR J. BOYNTON, A. M., Assistant Professor of Sociology and Economics.

CHARLES H. ASHTON, A. M., Assistant Professor of Mathematics.

GEORGE F. KAY, A. M., Assistant Professor of Geology and Mineralogy.

ROBERT W. CURTIS, Ph. D., Assistant Professor of Chemistry.

A. FREMONT HENDRIX, A. M., Assistant Professor of Latin.

MARY C. FISH, Assistant Professor of Physical Education.

LOUIS E. SISSON, A. B., Assistant Professor of Rhetoric.

WILLIAM J. BAUMGARTNER, A. M., Assistant Professor of Zoology and Histology.

HENRY O. KRUSE, A. M., Assistant Professor of German.

ELISE NEUENSCHWANDER, A. B., Assistant Professor of French.

CHARLES H. GRAY, Ph. D., Assistant Professor of English Language.

WALLACE NOTESTEIN, A. M., Assistant Professor of European History.

HERBERT H. VAUGHAN, A. B., Assistant Professor of Romance Languages.

WILLIAM J. PELO, A. M., Assistant Professor of Education.

FRANCIS W. BUSHONG, S. D., Assistant Professor of Chemistry.

LULU GARDNER, A. B., Instructor in Rhetoric.

RALPH W. BAHNER, A. M., Instructor in German.

LARRY M. PEACE, A. B., Preparator in Botanical Laboratory.

WARREN F. FARAGHER, Laboratory Assistant in Chemistry.

MARY A. DUKE, A. B., Assistant Instructor in Zoology.

ULYSSES G. MITCHELL, A. B., Assistant Instructor in American History.

THOMAS B. FORD, A. B., Assistant Instructor in Chemistry.

JAMES A. G. SHIRK, M. S., Assistant Instructor in Mathematics.

JOHN K. HARVEY, Assistant Instructor in Physiology.

*Absent on leave, 1905-'06.

## Courses Offered.

The College offers the courses in literature, science and the arts that provide the so-called liberal education, and leaves in the main the applied science and arts to other departments. It is administered so that the required work for entrance and during Freshman and Sophomore years shall result in the student's having had a minimum number of courses in the fundamental branches of knowledge on which he will base his broader and more specialized work of the Junior and Senior Years.

## Degree Conferred.

All graduates of the College receive the degree of bachelor of arts.

## Admission.

There are two methods of admission to the College: First, by examination; second, by certificate.

### 1. By Examination.

**Times and Place.** Candidates for admission to first-year work in the College of the University, not presenting the required certificates, will be examined at the University, Lawrence, either on Thursday, Friday, and Saturday, May 31, June 1 and 2, 1906, or on Wednesday, Thursday, and Friday, September 12, 13, and 14, 1906. The following is the schedule of examinations:

**Thursday, May 31, or Wednesday, September 12.**

| | | | |
|---|---|---|---|
| 9–10. | English. | 1–2. | Physical geography. |
| 10–11. | Algebra. | 2–3. | German. |
| 11–12. | French. | 3–4. | Economics. |

**Friday, June 1, or Thursday, September 13.**

9–10. Geometry.
10–11. Latin.
11–12. History.
2–3. Greek.
3–4. Physics.

**Saturday, June 2, or Friday, September 14.**

8–9. Botany.
9–10. Chemistry.
1–2. Zoölogy.
2–4. Free-hand drawing.

Candidates for admission may divide the examination between two years, or between the two examinations of the same year, under the following conditions: The applicant may present himself at the preliminary for examination in any or all of the prescribed subjects, and, if he is successful in five or more subjects, he need not be again examined in them.

Examinations for advanced standing on work done in preparatory schools, not required for admission, will be held at the same time as entrance examinations above.

### 2. By Certificate.

Nearly all students enter the College by certificate from high schools, academies, military schools, or preparatory schools of other colleges and universities, accredited by the University.

The candidate for admission by certificate must present either a certificate of graduation from an accredited preparatory school, or a letter from the principal of such school recommending him for admission without graduation. The certificate should be signed by the principal or other executive officer of the school. Blank certificates will be sent by the Registrar of the University about May 1 of each year to the principal of each accredited school. The certificates of all expecting to enter the College of the University should be filled out, signed and returned by the principal or superintendent of schools to the Registrar before June 1.

Blank certificates will be sent on application to the Registrar.

### Entrance Unit.

Preparatory work is estimated in terms of the "entrance unit." A subject (like algebra, for example) running one year, *i. e.*, thirty-five weeks, five recitations per week, with at least forty minutes for each recitation, constitutes one "entrance unit." In computing entrance units, the laboratory period should be twice the length of a recitation period.

### Number of Units Required.

Fifteen units are necessary for unconditional admission to the College. A temporary deficiency, however, of not more than three units will be permitted, but the deficiency in any "group" given below must not exceed one unit.

### Making up Deficiencies.

A student thus conditioned must make good all of his deficiencies during his first year in the University. Deficiencies thus made good do not count as College work.

In making up deficiencies at the University, a "College unit," *i. e.*, five hours a week for a half-year (one term), is considered equivalent to an "entrance" (or high-school) "unit," as above defined.

**College Credit.**

College credit for work done in preparatory schools will be given upon examination only. (See page 73 for times and place of examination.)

## Subjects for Admission.

The subjects from which entrance work may be offered, together with the number of units, are arranged in six groups, as follows; a total of fifteen units must be offered:

| | | |
|---|---|---|
| GROUP I, English. | English, four units. | Three units are required. |
| GROUP II, Mathematics. | Elementary algebra, one and one-half units.<br>Plane geometry, one unit.<br>Solid geometry, one-half unit.<br>Plane trigonometry, one-half unit.<br>Advanced algebra, one-half unit. | The elementary algebra and plane geometry are required. |
| GROUP III, Foreign Languages. | Latin, four units.<br>Greek, three units.<br>German, three units.<br>French, three units. | Of these, three units are required, which must be, first, in Latin, or, second, in German. |
| GROUP IV, Physical Sciences. | Physical geography, one unit.<br>Physics, one unit.<br>Chemistry, one unit. | One unit is required. |
| GROUP V, Biological Sciences. | Botany, one unit.<br>Zoölogy, one unit.<br>Physiology, one unit. | One unit is required. |
| GROUP VI, History. | Greek and Roman, one unit.<br>Mediæval and modern, one unit.<br>English, one unit.<br>American, one unit.<br>Economics, one unit. | One unit is required. |

As observed above, to secure unconditional admission to the Freshman class of the College the candidate must offer fifteen units from the foregoing list of accredited preparatory subjects. Of

these fifteen units, eleven and one-half are prescribed by group; the remaining three and one-half units may be chosen without restriction.

In view of the difficulty some preparatory schools may have in expanding their courses of study so as to include all the required units, until further notice candidates will be admitted unconditionally who offer fifteen units from the foregoing list, with only eight and one-half units specifically required. These required subjects are, three units of English, three units of either Latin or German (not a combination of the two); two and one-half units of mathematics; the remaining six and one-half units may be selected from the six groups without restriction.

Students entering with fifteen units who take advantage of this privilege of postponing prescribed entrance requirements must make good such deferred requirements during their first year in the College. A course so taken during the Freshman year counts as regular College work.

It is hoped that within a reasonable time all Kansas high schools will be able so to arrange their courses of study as to meet all the entrance requirements of the University.

## Entrance Subjects in Detail.

**English.** Four units (three required).

The requirement in English is that agreed upon by a joint commitee of colleges and secondary schools and now uniformly accepted by all colleges in the United States. Of this requirement, the following is a general definition:

"**I. Reading.** A certain number of books will be set for reading (see list subjoined). The candidate will be required to present evidence of a general knowledge of the subject-matter and to answer simple questions on the lives of the authors. The form of examination will usually be the writing of a paragraph or two on each of several topics to be chosen by the candidate from a considerable number—perhaps ten or fifteen—set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will call for only a general knowledge of the substance of the books. In place of a part or the whole of this test, the candidate may present an exercise book, properly certified by his instructor, containing compositions or other written work done in connection with the reading of the book. In preparation for this part of the requirement, it is important that the candidate shall have been instructed in the fundamental principles of rhetoric.

"**II. Study and Practice.** This part of the examination presupposes the thorough study of each of the works named in this division. The examination will be upon the subject-matter, form, and structure. In addition, the candidate may be required to answer questions involving the essentials of English grammar and on the leading facts in English literary history to which the prescribed texts belong.

"*Note.*—No candidate will be accepted in English whose work is notably defective in point of spelling, punctuation, idiom, or division into paragraphs."

The books recommended for use in each of the preceding divisions are as follows:

**I. For Reading.** For 1906, 1907, and 1908: Shakspere's The Merchant of Venice and Macbeth; Sir Roger de Coverley Papers in the Spectator; Irving's Life of Goldsmith; Coleridge's The Ancient Mariner; Scott's Ivanhoe and Lady of the Lake; Tennyson's Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur; Lowell's The Vision of Sir Launfal; George Eliot's Silas Marner.

**II. For Study and Practice.** For 1906, 1907, and 1908: Shakspere's Julius Cæsar; Milton's Lycidas, Comus, L'Allegro, and Il Penseroso; Burke's Speech on Conciliation with America; Macaulay's Essay on Addison and Life of Johnson.

The work indicated in the preceding statements is intended to occupy three years of a high-school course, five recitations weekly; and it is intended that teachers shall be left free to secure the indicated results in whatever way may prove most suitable, and, in particular, to substitute for the books named others of equivalent literary value and of similar types, or to add others to the list. Hence, it is impracticable to describe or to define precisely what should be done in any one year or in any one term; but a few suggestions may be made, to be followed at discretion.

It is preferable to carry on the subjects side by side, in the proportion of two recitations a week devoted to composition, grammar, and rhetoric, to three devoted to literature; the study of composition to include the writing of one or two exercises every week, and the discussion of these exercises to be made the means of reviewing the principles of grammar as well as those of rhetoric; text-books to be used chiefly for reference, if at all.

**Grammar.** If students do not enter the high school with such a practical knowledge of grammar as will enable them, on occasion, to name and classify parts of speech, explain the structure of sen-

tences, and state and apply principles, the subject should be further studied in connection with the work in composition, and, if necessary, there may be a brief formal review at some stage of the high-school course.

**Composition and Rhetoric.** The text-book in rhetoric is to be regarded merely as an aid in the study of composition and of literature. Exercises in composition should be oral as well as written, and should be continuous through the high-school course. Subjects should be derived partly from the literature read by the class and partly from the student's own observation and experience. The order of advance may be: First, stories; the finding and shaping of descriptive and narrative material in easy, spontaneous expression. Second, essays; study of theme, plan, and paragraph. Third, the general principles of style; the sentence and the word. Fourth, the general principles of form—narrative and descriptive, expository and argumentative.

**Literature.** Text-books in history, biography and criticism are merely incidental aids in the study of classics, and, like those in rhetoric, should rarely, if ever, be made subjects of formal recitation, except in reviewing. It is desirable that, of the books read in the high-school course in literature, those of modern authors shall be taken up first, and that the order of types shall be such as will coordinate the study with that of composition. American literature, if included, should precede English, and the prose of any period should precede its verse. Reading done at home should be preceded and followed by class discussions and reports. At the end of the course there should be a chronological review, with a good text-book, of all the work that has been done, with a brief survey of earlier periods.

The books named in the preceding standard lists may be tentatively arranged by years in the order following, and the study of composition coordinated as shown. The earlier reading will be more rapid, the latter more critical.

**First Year.**

*Literature—in class.*—Silas Marner, in part, or general survey and class discussion; Vision of Sir Launfal; Essay on Addison; Life of Johnson.

*Partly out of class.*—Silas Marner, completed; Ivanhoe; Poems of Tennyson; The Ancient Mariner; Life of Goldsmith; Lady of the Lake. (Changes, additions or omissions at discretion.)

*Composition.*—Finding and shaping of material; stories, essays, paragraphs, letters, etc.

**Second Year.**

*Literature.*—Speech on Conciliation ; minor poems of Milton ; Sir Roger de Coverley Papers. (Other books at discretion.)

*Composition.*—The principles of style ; sentences, words, paraphrase, etc.

**Third Year.**

*Literature.*—Macbeth ; general review ; Merchant of Venice ; Julius Cæsar. (Other books at discretion ; *e. g.*, Bunyan, Bacon, selections from English Bible.)

*Composition.*—The forms of discourse ; general principles of narration and description, exposition and argument.

**Fourth Year.**

Accredited high schools may offer a fourth year of English, if approved by the High-school Visitor ; and the character of this unit or fourth year's work may be arranged with reference to the conditions of individual schools. An alternative is offered between the following three courses :

1. The time may be given chiefly to the study of English literature of the seventeenth century and earlier, beginning with a thorough historical survey of the field, and including the reading of Old English verse in translation, of selections from Chaucer and Spenser, and of seventeenth century classics, prose and verse, not included in the course of the first three years. With this study there should be regular essay writing, not less often than once a month.

2. The time may be given chiefly to the study of the principal forms of discourse, narrative and descriptive, expository and argumentative, with daily practice in adapting these to all purposes and occasions for which speaking or writing is demanded, with especial reference to purpose and occasion, and to the character of the person or public to be addressed. With this there should be a considerable amount of collateral study of literary selections illustrating the several types as they are taken up for practice.

3. The time may be given chiefly to the study of English language ; beginning with elementary Old English grammar, prose composition, and readings from the simplest prose and verse. Then may follow the history of the English language and grammar after the Old English period, with attention to orthography, pronunciation, word composition and word derivation, inflections and syntax ; and the course may be completed with the study of Middle English grammar, pronunciation, and selections from Chaucer. With this study there should be regular themes or essays, from once a week to once a month.

The third of these options is recommended wherever it is practi-

cable to give it, and excellent text-books for it are available: Smith's Old English Grammar for the Old English part; Emerson's History of the English Language, or Champney's for the historical part, and, for the study of Middle English, Sweet's First and Second English Middle Primers or the school editions of Chaucer's Prologue and the Knightes Tale.

Entrance certificates must show in complete detail the nature of this fourth unit, if offered.

Detailed suggestion with reference to the teaching of all subjects named may be found in the University "Handbook on the Teaching of English," by Prof. E. M. Hopkins. Sent on receipt of five cents for postage.

**Mathematics.** Four units, of which two and one-half are required.

It is assumed that all candidates for admission to the University are proficient in the practical applications of arithmetic. The University recommends that the arithmetic in the upper grades be made more algebraic in character or that some elementary algebra be taught in the grades in the place of some of the more abstract topics in arithmetic. It also recommends that concrete geometry, under its own name or under the name of geometrical drawing, be taught in the grades.

The student must offer a minimum of two and one-half units, and may offer a maximum of four units in mathematics, in five subjects, as follows:

**Elementary Algebra.** One and one-half units. The required one and one-half units of algebra shall consist of the four fundamental operations of algebra; factoring; determination of highest common factor and lowest common multiple by factoring; fractions; simple equations, both numerical and literal; simultaneous equations, both numerical and literal, containing two and three unknown quantities; radicals, including the extraction of the square root of polynomials and of numbers; exponents, including fractional and negative; quadratic equations, in one and two unknown quantities, both numerical and literal; ratio and proportion; binomial theorem for positive integral exponents; formulas for the $n$th term and the sum of the terms of arithmetic and geometric progressions, with applications.

Throughout the course the pupil should be required to solve numerous problems which involve putting questions into equations. Some of these problems should be chosen from mensuration, from physics, and from commercial life. The use of graphical methods and illustrations, particularly in connection with the solution of

equations, is also required. The same credit will be given for the work if done partly in the grades and partly in the high school or if done wholly in the high school.

**Plane Geometry.** One unit. The usual theorems and constructions of good text-books, including the general properties of plane rectilinear figures; the circle and the measurement of angles; similar polygons; areas; regular polygons and the measurement of the circle. The solution of numerous original exercises, including loci problems, and the application to the mensuration of lines and plane surfaces is strongly insisted on. The first five books of Wentworth's Geometry (or an equivalent) will be accepted. This unit is required.

**Solid Geometry.** One-half unit. The usual theorems and constructions of good text-books, including the relations of planes and lines in space; the properties and measurements of prisms, pyramids, cylinders, and cones; the sphere and the spherical triangle; numerous original exercises, including loci problems and applications to the mensuration of surfaces and solids.

**Plane Trigonometry.** One-half unit. Definitions and relations of the six trigonometric functions as ratios; circular measurement of angles; proofs of principal formulas, in particular for the sine, cosine and tangent of the sum and difference of two angles, of the double angle and the half angle, the product expressions for the sum or the difference of two sines or of two cosines, etc.; the transformation of trigonometric expressions by means of these formulas; solution of trigonometric equations of a simple character; theory and use of logarithms (without the introduction of work involving infinite series); solution of right and oblique triangles and practical applications. Problems should be solved by the use of tables of natural functions and also by use of tables of logarithms and logarithmic functions.

**Advanced Algebra.** One-half unit. Permutations and combinations, limited to simple cases; complex numbers, with graphic representation of sums and differences; determinants, chiefly of the second, third and fourth orders, including the use of minors and the solution of linear equations; numerical equations of higher degree, and so much of the theory of equations, with graphic methods, as is necessary for their treatment, including Descarte's rule of signs and Hornor's method, but not Sturm's functions or multiple roots.

Most candidates prefer to offer three units of mathematics for entrance; these three units should consist of the two and one-half units of required algebra and plane geometry and one-half unit of solid geometry or plane trigonometry.

As to the order in which the mathematical topics should be taught in the high schools, the following is to be recommended:

*First Year.* Elementary algebra, including a brief treatment of quadratic equations.

*Second Year.* Plane geometry completed.

*Third Year.* Solid geometry, first half-year; required algebra completed, second half-year.

*Fourth Year.* Plane trigonometry, first half-year; advanced algebra, second half-year.

It is important that students entering the University should come with the algebra fresh in mind. Schools that do not offer the fourth year in mathematics should teach the last third of the required algebra as late as possible in the course.

**Latin.** Three or four units.

*First Unit.* Beginner's Book. In all written exercises the long vowels should be marked, and in all oral exercises pains should be taken to make the pronunciation conform to the quantities. Students should be taught from the beginning to read the Latin aloud with intelligent expression.

The important things in this year are: First, a perfect knowledge of the paradigms; second, some practice in reading easy connected passages in preparation for the second year's work.

*Second Unit.* The first four books of Cæsar's Gallic War, or selections from Cæsar equivalent in amount to those books; and the equivalent of one period a week in prose composition. Selections from other prose writers, such as Nepos, may be taken as a substitute for one book of Cæsar, or an equivalent amount may be read in any of the "second-year books," provided at least two books of Cæsar are included.

The important things in this year are: First, a systematic drill on the more common case and mode uses; second, an intelligent comprehension of the matter read. The students should be able to give a good account of any of Cæsar's campaigns.

*Third Unit.* Six orations of Cicero, and the equivalent of one period a week in prose composition. The orations should include the four against Cataline and the Manilian Law. Sallust's Cataline may be substituted for the Manilian Law and a sixth oration.

The important things in this year are: First, a systematic drill in all Ciceronian case and mode uses; second, an intelligent comprehension of the contents of the orations.

*Fourth Unit.* The first six books of Vergil's Æneid, and the

equivalent of one period a week in prose composition. An equivalent amount of Ovid may be substituted for part of the Vergil.

The important things in this year are: First, an intelligent appreciation of Vergil's story and art; second, a training in reading the meter which will allow the student to read the Latin metrically with ease and expression; third, a study of the mythology. If the work of the first three years has been done well, syntactical drill should be confined almost wholly to the period devoted to prose composition.

*Note.*—When only three units are presented, it is preferred that they be the first, second, and third; but the first, second and fourth will be accepted. No combination of Cicero and Vergil will be accepted as a unit.

*Latin Prose Composition.* It will be noticed that prose composition is required throughout the last three years. One period a week may be devoted to it, or a smaller amount may be given each day. Such books as Bennett's and Jones's are recommended as giving the more systematic drill, but they should be supplemented by the occasional dictation of connected passages based on the text read. Such books as Daniell's and Moulton's will be accepted, but they need to be supplemented by a systematic study of the grammar. D'Ooge's Latin Composition is also good. If the book chosen does not give sufficient material for work in connection with Vergil, Nutting's Supplementary Latin Composition is recommended.

**Greek.** One, two or three units.

*First Unit.* Elementary Greek. White's First Greek Book or Gleason and Atherton's First Greek Book, or an equivalent. Thorough mastery of declensions and conjugations, and the main ideas of syntax. Xenophon's Anabasis begun, and twenty to thirty pages read. Goodwin's, Babbitt's or Goodell's Greek Grammar.

*Second Unit.* Xenophon's Anabasis continued into or through the fourth book, or an equivalent amount of other Attic prose. Review of inflections. Systematic study of syntax in the grammar. Practice in writing Greek based on the text read. Constant training in sight-reading.

*Third Unit.* Homer's Iliad or Odyssey, five to six books, exclusive of the Catalogue of Ships. Constant practice in reading at sight. Special attention to Homeric forms, vocabulary, and scansion. Attic prose composition once a week. Seymour's School Iliad. Perrin and Seymour's School Odyssey.

**German.** One, two or three units.

*First Unit.* The elements of grammar (the first eighteen lessons of Carruth's Otis's Essentials of German Grammar), including: (1) Careful drill in pronunciation; (2) familiarity with German script and text; (3) the memorizing of paradigms; (4) the writing, correction, memorizing and reciting after correction of all the English-German exercises in one of these grammars; (5) colloquial exercises daily to illustrate and fix the principles and the vocabulary introduced; (6) the memorizing of 100 lines of good German (popular songs or narrative prose). One-half year.

The reading and translation of about seventy-five pages of simple German (as in Carruth, Hewett, Joynes-Meissner Readers). This reading should involve the reading aloud of the German, the rendering into good idiomatic English, and question and answer in German upon what is read. Word-for-word translation should not be permitted, save when necessary to show the precise force of an idiom. One-half year.

The above work will require, if properly done, five forty-five minute periods weekly for thirty-five weeks. A wise plan is to begin with the grammar and carry this continuously for five or six weeks. Then introduce the reader; at first, one lesson a week, and then, after ten or twelve weeks, increasing the number of lessons from the reader until the grammar lessons have been completed and thoroughly reviewed.

*Second Unit.* Additional study of grammar, directed to the details of case government, use of the modal auxiliaries, of the subjunctive, and of word order. (The equivalent of lessons XIX to XXIV in Carruth's Otis's Essentials.) Practice in writing German from dictation, at least eighteen exercises (one a week for a half-year, to occupy fifteen to twenty minutes each).

Reading and translation of 100 pages of connected prose and of Schiller's Wilhelm Tell, complete. The 100 pages of prose may be made up from the remainder of Carruth's or Hewett's Reader, together with Zschokke's Der zerbrochene Krug, Heyse's Die Blinden or Anfang und Ende, Storm's Immensee, Andersen's Maerchen, Grimm's Maerchen.

*Third Unit.* Review of grammar, and the completion of Carruth's Otis, lessons XXV to XXX, with drill on the less usual strong verbs and on the idioms of tense and order. Composition work, consisting chiefly of paraphrases of the German used for translation.

Reading of 400 pages of standard German, with careful transla-

tion and critical understanding. (Some portion of what is translated should always be read aloud in German.) Suitable works are: Freytag's Die Journalisten and Lessing's Minna von Barnhelm; Fouque's Undine; Hauff's Das kalte Herz; Schiller's Der dreissigjährige Krieg; Freytag's Doktor Luther; Riehl's Burg Neideck; Goethe's Hermann und Dorothea.

**French.** One, two or three units.

*First Unit.* Rudiments of grammar; conjugation of the regular and the more usual irregular verbs; moods and tenses; use and positions of pronouns; partitive constructions. Careful drill in pronunciation. Reading of 100 pages of easy prose. Practice in writing and speaking very simple sentences.

*Second Unit.* All the essentials of accidence and syntax. Composition. Frequent dictation. Oral exercises. Reading of 300 to 350 pages of modern French.

*Third Unit.* Thorough review of grammar. Written exercises based upon grammatical points, and connected writing. Dictation. Practice in hearing and speaking French. Reading of 600 pages of fairly difficult modern French.

**Physical Geography.** One unit.

The course in physical geography should include a study of the following subjects:

1. The earth as a globe; shape of the earth, how proved; size, how measured; motions, how determined; map making; different modes of projection.

2. The ocean; forms and divisions, depth, density, temperature; ocean movements, waves and currents; character of ocean floor; life in ocean; tides, character and causes; shore-lines.

3. The atmosphere; chemical composition and how determined; pressure of, and how determined; circulation of, character and cause; storms, classification of, and cause.

4. Land, amount and distribution of; topographic charts; plains, kinds of, and development of; plateaus, kinds of, and development of; volcanoes, distribution and character of; rivers, life-history of; glaciers, kinds and characteristics of.

**Physics.** One unit.

The candidate's preparation in physics should include:

1. Recitations on at least one standard text, such as Carhart and Chute's High-school Physics, Wentworth and Hill's Text-book of Physics, or Student's Manual of Physics, by L. C. Cooley.

2. Experimental work, consisting of lecture-table demonstrations and individual laboratory work. The latter should comprise at least thirty-five exercises selected from such lists as are given in Laboratory Manual of Physics, by Cheston-Dean-Timmerman, or Cooley's Manual, mentioned above.

**Chemistry.** One unit.

Preparatory work in this subject should cover practically the work done in course I in the University. The student should have a good knowledge of (1) modern chemical theories; (2) the most important facts of chemical science; (3) the practical applications of chemistry to every-day life and to the useful arts. It is important that elementary physics be thoroughly understood before taking up the study of chemistry. About two-fifths of the time devoted to chemistry should be spent in actual laboratory work by the students individually, and it is not sufficient if the instructor performs the experiments in the presence of the class. Any good text-book, such as Remsen's Introduction to the Study of Chemistry (sixth edition), Newth's Inorganic Chemistry, or Introduction to General Chemistry, by H. C. Jones, may be used. Some of the abridged text-books are too elementary to fulfil the requirements of the University.

**Botany.** One unit.

A unit's course in botany should essentially follow the outline recommended in the Proceedings of the Seventh Annual Meeting of the North Central Association of Colleges and Secondary Schools. Detailed directions for such a course are given in Ganong's The Teaching Botanist, Stevens's Introduction to Botany, and Bergen's Foundations of Botany. Not less than two-thirds of the time should be devoted to laboratory work, and the remainder to recitations and discussions. Field excursions should be made, so that the students may know in their natural surroundings the plants already studied in the laboratory. Careful drawings and notes should be required in connection with the laboratory work.

**Zoology.** One unit.

Acceptable work in zoölogy must be of such a character that at least two-thirds of the time is spent in individual study of type specimens. The value of the study rests in the training given in independent observation and correlation of facts, and in the accurate recording of these facts by drawings and notes. Comparative work is of the greatest importance. The arthropods are the best group in Kansas upon which to work, and it is suggested that they

be used to exemplify the general principles of structural relations and classification. For a laboratory guide, Marshall and Hurst's Practical Zoölogy is recommended, and as a text-book, Parker and Haswell's Manual of Zoölogy. Where much of the time is devoted to the study of insects, Hunter's Elementary Studies in Insect Life may be used as a guide, and Comstock's Manual of Entomology and Weed's Life-histories of American Insects as reference books.

**Physiology.** One unit.

To encourage the more systematic teaching of this important subject, the University will accept it as an entrance unit, but provided only that the study occupies a full year of high-school time, and is taught by laboratory method and by specially prepared instructors.

In presenting this subject, about one-half of the time should be employed in laboratory work and the remainder of the time in recitations. To insure the best results and to cultivate the power of observation and expression, neat and correct drawings properly labeled and accompanied by intelligent notes should be made of each subject, demonstration or experiment studied.

Martin's Briefer Course of the Human Body or Colton's Experimental and Descriptive Physiology are recommended as text-books.

**Greek and Roman History.** One unit.

If four years of history are offered in the high school, it is recommended that Greek and Roman history, with some preliminary study of the earlier nations, be given in the first year; otherwise, as early as possible. In selecting a text the teacher will do well to examine Morey, West's Ancient World, Wulfson, Myers, and Botsford.

**Mediæval and Modern European History.** One unit.

This should, if possible, succeed the course in ancient history, and precede that in English history. If English history is not offered separately, some special stress may be laid upon it in this course. Many excellent text-books have recently appeared on this subject. Among these are Munro and Whitcomb, Bourne, West, Myers, and Robinson.

**English History.** One unit.

In a four-year course English history should be offered in the third year; otherwise it should, at any rate, precede American history. There are numerous text-books on the subject. Besides

that recommended for state use, Channing and Higginson, there are Corman and Kendall, Walker, Cheyney, Wrong, Larned, Montgomery, and Andrews.

*Note.*—Attention should be given, in the three courses above, to geography, some outside reading, and the taking of notes. The use of outline maps to be filled in by the students is especially recommended. In all good text-books will be found lists of references to books desirable for a school library. The Report of the Committee of Seven should also be consulted. But the department does not urge that the division between ancient and mediæval history be fixed at 800 A. D.

**American History.** One unit.

This is the course recommended by the Committee of Seven of the American Historical Association in their report on the study of history in schools. In order to receive entrance credit, the course must not be given before the third year in the high school, and must be based upon some such approved text as Channing's Student's History of the United States or McLaughlin's History of the American Nation.

**Economics.** One unit.

The general principles of economic science, with some of its applications. The instructor, as far as possible, should approach the subject from the concrete rather than from the abstract, and should verify every principle by practical examples. Blackmar's Economics (or its equivalent) should be used as a text and guide. Special attention should be given to books II and III. Chapters II and III of book I and chapters I, II and III of book III require special analysis by the instructor.

A limited amount of collateral reading should be required, and easy investigations of local economic conditions should be advised.

## Admission to Advanced Standing.

The regulations governing admission to advanced standing in the College are administered by a committee of the Faculty which examines into the merits of each case presented to it and either credits the applicant with a certain rank or recommends him to the heads of departments for advanced credit or examination.

*Application for such advanced standing must be made at the time of matriculation.*

*Undergraduates from other colleges must present certificates of honorable dismissal, or other satisfactory evidence of good character.*

Some of the requirements of the College are indicated as follows:

I. By examination. A candidate may be admitted to the Sophomore, Junior or Senior class, if he appear on examination to be prepared in the following studies: (1) In the studies required for admission to the Freshman class. (2) In all such studies as he would have pursued if he had entered at the beginning of the course.

*All applications for examination for advanced standing must be made during the opening week of the first term. College credit will be given for work done in preparatory schools upon examination only.* The times and place of such examinations are the same as listed on page 73.

II. Without complete examination. Graduates or students from the higher classes of other colleges may be admitted to advanced standing upon presentation of a certificate stating in detail the work done, under such conditions as the Faculty may determine to be just in each case, upon consideration of the applicant's previous course of study and of the evidence he presents of his proficiency in that course.

It is required of all candidates for the bachelor's degree who have entered the University on advanced standing from other colleges that they do not less than thirty hours of Junior or Senior work in residence at the University.

Students leaving the University before obtaining the bachelor's degree, who have spent three full years in residence at the University, and lack but fifteen hours of graduation, may receive not to exceed fifteen hours' credit from an institution of equal standing, provided they receive the bachelor's degree or a higher degree from such institution.

## Special Students.

Opportunity is given in the College for the admission of persons of mature years who desire to pursue some special line of work, without following any prescribed course or becoming candidates for a degree.

The admission of such special students is directly under the control of a committee of the Faculty, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for classification as special students must present satisfactory evidence of proper preparation for the studies desired and must also meet such other requirements as may be fixed by the Faculty.

## Registration and Enrolment.

All candidates for admission having certificates from accredited schools and all students of the College intending to pursue their studies during the ensuing year must present themselves for registration at the University on September 12 to 15, inclusive, 1906. Registration at a later date will be permitted only on the presentation of a satisfactory reason for the delay.

The Dean of the College is charged with the execution of all University and Faculty rules relating to the enrolment of students in classes and their choice of studies.

*Time of Application for Enrolment.* At least two weeks before the end of each term, all students in residence are required to file with the Dean applications for enrolment in the courses which they desire to pursue during the following term.

*Completion of Requirements.* A student may not be enrolled in any course in advance of any other which he has yet to take, and which it is possible for him to carry at the time.

## Examinations.

Examinations will be held for all students during the regular recitation hours of the last days of the term (or half-term), each class in its proper recitation hour; they may occupy not more than one hour for each hour per week that the course has occupied. Examinations shall be held for all classes on the last day of the examination period.

Special examinations will be given only during examination weeks and during the opening week of the fall term.

All requests for special examinations must be approved by the Dean.

*Failures.* All failures in examinations must be made good at the earliest possible date, not more than one year from date of the failure. If not made good by the time of the recurrence of the course, the work must be done in class.

Absence from examination or failure in more than one-third of his work, in any one term, severs a student's connection with the University.

*Conditions.* A student who has failed to pass in any course may be conditioned upon the same by the Dean, if in the opinion of the instructor it can be made good by the next examination period without detriment to the regular work of the student. A condition which is not made up at the next examination period is placed again in the list of failures.

*Inadequate Preparation.* When students show by their current work insufficient entrance preparation in any study, they may be required to make good such deficiency in any manner prescribed by their instructors.

## Scholarships.

The following scholarships are offered to students in the College:

1. The Lucinda Smith Buchan Memorial Scholarship. Established by the alumnæ members of the Pi Beta Phi sorority. A loan of $200 for three years without interest. Open to young women of the Junior and Senior classes of the College. Held in 1905-'06 by Miss Amy Eunice Langworthy, of Leavenworth, Kan.

2. The Marcella Howland Memorial Scholarship. Sixty dollars a year. Open to young women of the Junior and Senior classes of the College. Held in 1905–'06 by Miss Anna B. Clinger, of Lawrence, Kan.

3. The Kansas City Branch of the Association of Collegiate Alumnæ Scholarship. Two hundred dollars a year. Awarded to young women, who are chosen from graduates of the Kansas City high school. Held in 1905–'06 by Miss Mabel Eggleston, of Kansas City, Mo.

4. A research table in the Marine Biological Laboratory, at Woods Hole, Mass., supported by Mrs. Sara T. D. Robinson, is open to women of the University who have specialized in the sciences and given evidence that they are fitted to make the best use of it. Held in 1905–'06 by Miss Miriam Sheldon, of Topeka, Kan. Application for the use of this table should be sent Mrs. Sara T. D. Robinson, Oakridge, Lawrence, Kan.

5. A research scholarship in systematic entomology is maintained by Prof. F. H. Snow. Two hundred dollars a year.

## Memorial Fund.

May Sexton Agnew Memorial Fund. A fund of $500 has been given the library of the University by the Kappa chapter of Kappa Alpha Theta fraternity. The income of this fund is to be devoted to the purchase of books in English literature.

## Teacher's Diploma.

The teacher's diploma of the University may be given to A. B., A. M. and Ph. D. graduates of the University on the following conditions:

1. *Special Knowledge.* The completion of at least twenty hours

of college work in the subject, or the closely allied subjects, that the candidate proposes to teach; the ultimate decision as to the candidate's proficiency to rest with the head of the department in which the major work is taken.

2. *Professional Knowledge.* The completion of twelve and one-half hours' work in the department of education.

3. *Amount of Work Offered.* The candidate for the A. B. degree, who is at the same time a candidate for the teacher's diploma, shall be required to offer five hours of additional undergraduate work.

4. *Grade of Scholarship.* The teacher's diploma shall be granted only to graduates whose scholarship in all of their undergraduate class work averages at least grade II.

On presentation of the University teacher's diploma, the State Board of Education will issue a three-year's state teachers' certificate. At the expiration of the three-year's certificate, a life certificate will be issued, if the candidate has taught successfully during two of the three years.

## Expenses.

By legislative enactment, the following fees must be charged each student of the College of the University, in lieu of all other fees of each school year, payable at the time of matriculation:

| | |
|---|---|
| Matriculation fee, payable but once | $5 00 |
| Incidental fee, payable annually | 10 00 |

To students residing in states or territories other than Kansas, the fee charged must be as follows:

| | |
|---|---|
| Matriculation fee, payable but once | $10 00 |
| Incidental fee, payable annually | 20 00 |

At graduation, a diploma fee of five dollars is required.

**Laboratory Supplies and Fees.** All the laboratories of the University and their equipment of power, engines, machinery, desks, tables, balances, microscopes, models and complete apparatus are at the disposal of students, under the direction of their instructors. These desks, benches and tables will be further provided with individual sets of tools, sets of working apparatus, and equipment. At the end of the course, or earlier at the discretion of the instructor, all the individual equipment in good order must be returned. Such as may have been lost, damaged, broken or destroyed by the student is to be paid for by him at that time.

Material and apparatus of every kind consumed, wasted or

broken in the manifold experiments and practices in laboratories must be paid for by the student.

For the economic and prompt supply of such material, coupon books, good in all departments, are furnished at the business office, in amounts of five dollars and two dollars. Any coupons unused are redeemable in cash at the Secretary's office at the end of the course.

**Other Expenses.** There are no dormitories connected with the University. Students find accommodations in the boarding-houses and homes in Lawrence. Information concerning the location of rooming and boarding-places may be had at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at $4 a week. Some persons who furnish plain rooms and good, plain food receive students at $3 a week. Day board in private families and at city restaurants may be obtained for $2.75 to $4 a week. Day board in clubs varies from $2.50 to $3 a week. Furnished rooms, usually occupied by two students, range from $4 to $15 a month. Unfurnished rooms rent for $1.50 to $3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can attend the University for very little cost in money.

The following table shows the estimated expenses of a student of the College for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends upon the tastes and habits of the student:

| | *Low.* | *Average.* |
|---|---|---|
| Board | $100 00 | $120 00 |
| Room | 20 00 | 40 00 |
| Books and stationery | 8 00 | 15 00 |
| Laundry | 8 00 | 20 00 |
| Matriculation and other fees | 15 00 | 15 00 |
| Incidentals | 15 00 | 50 00 |
| Totals | $166 00 | $260 00 |

**Self-help.** Many students find work in private families, in offices, and in various occupations, by means of which they defray a portion of their expenses. Some students have earned their entire expenses while in attendance, and have made good records at the same time; other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they came. If it is possible for the student to

have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. The University cannot guarantee work to any student, but will lend every possible assistance in finding employment. The University maintains an employment bureau, where the names of those seeking work and of those desiring workers are recorded. Students desiring places where they may help themselves are advised to apply to the Registrar of the University or to the University Y. M. C. A. or Y. W. C. A.

## List of High Schools Fully Accredited.

I.— Schools named in this list are working under the most favorable conditions.

| *Name of school.* | *Superintendent.* | *Principal.* |
|---|---|---|
| Abilene | W. B. Hall | N. U. Spangler. |
| Argentine | H. P. Butcher, A. B | Minnie J. Oliverson, A. B. |
| Arkansas City | L. W. Mayberry, A. B | R. S. Whitelaw. |
| Atchison county, Effingham | | J. W. Wilson, A. B |
| Beloit | J. O. Hall, A. B | J. H. Adams, A. B. |
| Cherokee county, Columbus | | C. S. Bowman. |
| Clay county, Clay Center | | S. A. Bardwell. |
| Concordia | A. B. Carney | Martha Whitney, A. B. |
| Coffeyville | W. M. Sinclair | H. F. Dwelle. |
| Chase county, Cottonwood Falls | | B. F. Martin. |
| Decatur county, Oberlin | | H. Q. Banta, A. M. |
| Dickinson county, Chapman | | Homer S. Myers, A. M. |
| Ellsworth | E. T. Fairchild | L. H. Beall, A. B. |
| Emporia | L. A. Lowther, A. B | W. L. Holtz, A. B. |
| Eureka | B. E. Lewis, A. B | W. A. Bailey. |
| Fort Scott | D. M. Bowen, A. B | F. M. Hammitt, A. M. |
| Galena | Leslie T. Huffman | Ray E. Merwin, A. M. |
| Garnett | C. H. Oman, A. B | Geo. H. Marshall. |
| Great Bend | C. A. Strong | W. L. Bowersox. |
| Holton | E. L. Holton, A, B | C. D. Ise, A. B. |
| Hutchinson | R. R. Price, A. M | Chas. A. Wagner, A. B. |
| Halstead | C. O. Smith | Orel McCroskey, A. B. |
| Hiawatha | Geo. G. Pinney, A. B | A. C. Andrews, A. B. |
| Iola | Miss Clifford A. Mitchell | L. H. Wishard. |
| Junction City | W. S. Heusner, A. M | R. F. Mills, A. B. |
| Kansas City, Kan | M. E. Pearson, B. D | W. C. McCroskey, A. B. |
| Labette county, Altamont | | W. M. Kyser, A. B. |
| Larned | W. S. Robb, A. B | Ora Mower, A. B. |
| Lawrence | F. P. Smith, A. M | F. H. Olney, A. B. |
| Leavenworth | G. W. Kendrick | Belle Witrock. |
| Minneapolis | A. F. Senter, B. S | D. O. Smith, B. S. |
| McPherson | C. W. Kline, A. B | Clinton Wright. |
| Lewis Academy, Wichita | | J. M. Naylor, A. M. |
| Marysville | C. B. Myers, A. B | T. L. Eyerly, A. B. |
| Montgomery county, Independence | | S. M. Nees, B. S. |
| Newton | D. F. Shirk, A. B | O. J. Silverwood, A. B. |
| Norton county, Norton | | H. H. Gerardy. |
| Olathe | R. L. Parker, A. B | G. M. Husser, Ph. B. |
| Ottawa | A. L. Bell, Ph. B | H. P. Study, A. B. |
| Paola | E. D. George, A. B | F. K. Ferguson, B. S. |
| Parsons | J. A. Higdon, A. M | Louise M. Schaub. |
| Pittsburg | A. H. Bushey | J. E. Crawford. |
| Rosedale | George E. Rose, B. D | Anna D. White, A. B. |
| Reno county, Nickerson | | E. B. Smith, A. M. |
| Southern Kansas Academy, Eureka | | W. E. Faught, B. S. |
| Salina | G. R. Crissman, A B | John Lofty, A. B. |
| Seneca | C. C. Starr, B. S | Pearl McCurdy, B. S. |
| St. John's Military School, Salina | | R. H. Mize, A. B. |
| Smith Center | T. H. Hooper, A. B | D. H. Rose, A. B. |
| Sumner county, Wellington | | Thos. W. Butcher, A. M. |
| Sterling | Geo. L. Seeley, A. B | Jeanette Inches, Ph. B. |
| Sedgwick | R. A. Hampshire, M. S | Adaline Finn. |
| Thomas county, Colby | | Wm. E. Ray, A. M. |
| Topeka | L. D. Whittemore, A. M | H. L. Miller, A. B. |
| Washington | W. D. Vincent, A. B | C. H. Myers, A. B. |
| Wichita | R. F. Knight | E. H. Ellsworth, A. M. |
| Winfield | John W. Spindler, A. M | C. H. Rhodes, A. M. |

**II.**—Schools named in this list fall short of the most favorable conditions in some respects.

| *Name of school.* | *Superintendent.* | *Principal.* |
|---|---|---|
| Anthony | J. H. Clement, A. B. | Jennie G. Fones, A. B. |
| Atchison | Nathan T. Veatch | A. H. Speer, A. B. |
| Burlingame | C. A. Deardorff | Grace Brigham, A. B. |
| Burlington | W. A. Stacey, B. S. | Myrtle Collins, A. B. |
| Chanute | J. H. Adams | J. A. Cannan. |
| Crawford county, Cherokee | | W. S. Pate. |
| Council Grove | A. M. Thoroman | Irene Pemberton, A. B. |
| Cherryvale | A. J. Lovett, A. B. | Bennett Grove. |
| Clyde | C. M. Ware | Emma Palmer, A. B. |
| El Dorado | Warren Baker | J. A. Hall, A. B. |
| Gove county, Gove | | S. E. Lee. |
| Lyons | T. A. Edgerton | R. G. Henderson. |
| Osage City | E. C. Hackney | L. E. Swenson. |
| Osawatomie | C. L. Williams | May E. Williams, A. B. |
| Peabody | W. D. Ross, A. M. | Alinthe Spilman, A. B. |
| Sheridan county, Hoxie | | R. G. Mueller, A. B. |
| Wamego | A. J. Beatty, B. S. | Grace Eaton, A. B. |

**III.**—Schools named in this list are not located in Kansas, but are working under the most favorable conditions and are duly accredited schools.

| *Name of school.* | *Superintendent.* | *Principal.* |
|---|---|---|
| Albuquerque, N. M. | J. E. Clark | J. A. Miller, B. P. |
| Beaverhead county, Dillon, Mont. | | L. R. Foote. |
| El Reno, Okla. | F. N. Howell | Warren Ingold, A. B. |
| Hot Springs, Ark. | Geo. B. Cook | F. C. Nolen, A. B. |
| Joplin, Mo. | W. P. Roberts | S. A. Baker. |
| Kansas City, Mo., Manual Training | J. M. Greenwood, Ph. D. | E. D. Phillips, Ph. M. |
| Kansas City, Mo., Central | J. M. Greenwood, Ph. D. | I. I. Cammack. |
| Kansas City, Mo., Westport | J. M. Greenwood, Ph. D. | S. A. Underwood. |
| Kemper Military, Boonville, Mo. | | T. A. Johnston, A. M. |
| La Junta, Colo. | | O. J. Blakesley, Ph. D. |
| Oklahoma City, Okla. | Ed. S. Vaught, B. S. | J. B. Taylor. |
| Prosso Preparatory School, Kansas City, Mo. | | J. P. Richardson, A. B. |
| St. Joseph, Mo. | J. A. Whitford | R. H. Jordan, A. B. |
| Warrensburg, Mo. | W. E. Morrow, B. P. | Edward Beatty, B. P. |
| Wentworth Military Academy, Lexington, Mo | | S. Sellers, A. M. |
| Western Military Academy, Upper Alton, Ill. | | Albert M. Jackson. |
| Woods county, Helena, Okla. | | J. H. Sawtell, A. B. |

## List of High Schools Not Fully Accredited.

**I.**—The forty-nine schools named in this list fall short of full preparation by not more than three units.

| *Name of school.* | *Superintendent.* | *Principal.* |
|---|---|---|
| Augusta | W. F. Rice, A, B. | Carmie Wolfe, A. B. |
| Burrton | Robt. N. Halbert, Ph. B. | Ida Shive, A. B. |
| Belle Plaine | C. H. Landrum, A. B. | Lulu Grosh, A. B. |
| Blue Mound | A. D. Hiatt, A. B. | Ellen Dingus, B. S. |
| Cawker City | A. P. Gregory, B. S. | A. M. McKechnie. |
| Clifton | G. B. Buikstra, A. B. | W. A. Cain. |
| Carbondale | Chas. Kelley | Grace Lyon. |
| Centralia | A. W. Jarrett | Carrie Beery, A. B. |
| Delphos | M. C. Shaible, B. S. | Inez Dickinson, B. P. |
| Dodge City | C. A. Smith, A. B. | Roger Dean, A. B. |
| Douglass | J. H. Gibson | Etta Marshall. |
| Frankfort | M. G. Kirkpatrick | Harriet Landers. |
| Fredonia | I. L. Garrison, B. S | H. M. Starns. |
| Florence | C. E. St. John | Bertha Van Hove. |
| Garden City | E. F. Ewing, A. B. | Mae Cathcart, Ph. B. |
| Girard | H. W. Shideler, A. B | Lillian Bell, A. B. |
| Hays | R. T. Madden, A. B. | Miss A. Foster. |
| Herington | W. W. Jones | Lavonia M. Donica. |
| Horton | W. W. Wood, A. B. | Wm. M. Blair, A. B. |
| Harper | E. E. Sluss, B. S. | Margaret Dean. |
| Howard | Harley I. French | Hallie D. Paynter. |
| Humboldt | J. E. Cook | A. I. Decker. |
| Kingman | Alvin W. Ault, A. B. | Margaret Benedix. |
| Kinsley | D. A. Baugher | D. A. Baugher. |
| Lyndon | L. S. Runnels | Margaret Kelley, A. B. |
| Lane county, Dighton | | Herman Gillette, A. B. |
| La Cygne | J. E. Chamberlain | Mary E. Smith. |
| Marion | H. H. Van Fleet, A. B. | Clara Morris. |
| Mankato | F. W. Simmonds, M. S. | S. J. Butts, A. M. |
| Moline | J. L. Shearer, B. D | Delia Bates. |
| Neodesha | J. M. Steffen | G. F. Collins. |
| Nortonville | E. H. McMath, A. B. | Lena McConnell, A. B. |
| Overbrook | C. H. Hepworth, Ph. B. | Helen Ingham, A. B. |
| Osborne | B. K. Farrar, B. S. | Kate C. Clark, A. B. |
| Phillipsburg | T. O. Ramsey, A. B. | Olive Thomas. |
| Pleasanton | John Groendyke, B. S | Edith Bowers, A. B. |
| Pratt | W. Falkenrich, A. B. | Irene Crawford, A. B. |
| Plainville | C. E. Rarick, A. B. | Myrtle Pider. |
| Russell | J. N. Banks, A. M. | Alden Dannevik. |
| St. John | C. M. Hilleary | J. H. Byers, A. B. |
| Sabetha | Geo. T. Beach, A. M. | Susie M. Guild, A. B. |
| Scott county, Scott City | | R. Bullimore. |
| Stafford | Arthur L. Stickel, A. M. | Henrietta Hall. |
| Stockton | J. F. Smith, B. S. | Mrs. S. K. Smith, B. S. |
| Scranton | John Linn | John Linn. |
| Sherman county, Goodland | | S. V. Mallory, B. S. |
| Trego county, Wa Keeney | | J. H. Niesley. |
| Valley Falls | S. D. Dice | Maud Myers. |
| Waverly | Geo. R. Tilford | Jessie A. Fear, A. B. |

**II.**—Schools named in this list offer courses that have been approved by the University, but they have not yet been able to fulfil other conditions for accredited relations.

| *Name of school and principal.* | *Name of school and principal.* |
|---|---|
| Attica, W. L. Dunbar. | Louisburg, Floyd B. Lee. |
| Beattie, C. Kraemer. | Lansing, James B. Kelsey. |
| Blue Rapids, A. J. Clark, A. B. | Logan, Wm. R. Arthur, A. B. |
| Boling, Harriet Woodward. | Lecompton, J. W. Murphy, A. B. |
| Buffalo, H. E. Clewell. | Leon, Joseph I. Knott. |
| Burr Oak, F. Eaton. | Linwood, E. E. Heath. |
| Caldwell, D. C. Porter. | Le Roy, C. T. Sherwood. |
| Colony, John B. White. | Maplehill, J. H. Houston. |
| Corning, J. W. Roberts. | Marquette, V. H. Moon. |
| Erie, F. L. Pinet. | Moran, Geo. E. Jones. |
| Ellis, B. E. Ford. | Oskaloosa, W. A. Anderson. |
| Gas City, H. D. Ramsey. | Quenemo, E. L. Heilman. |
| Glasco, Inez Chapman, A. B. | Reading, F. E. Robinson. |
| Glen Elder, R. L. Hamilton. | Sylvan Grove, John A. Fleming. |
| Greenleaf, A. P. Warrington. | Syracuse, H. E. Walter. |
| Gypsum, J. E. Coe. | Springhill, C. H. Brooks. |
| Goff, Chas. A. Richard, A. B. | Tonganoxie, F. Brackett. |
| Havensville, P. R. Hamm. | Westmoreland, F. W. Comfort. |
| Hill City, A. E. Lunceford. | Wetmore, L. M. Duvall. |
| Hartford, Anna H. Brogan. | Wilson, H. Coover. |
| Hillsboro, J. W. Shideler. | Williamsburg, J. F. Lyon. |
| Kincaid, Thomas E. Osborn. | Weir, R. Rankin. |
| La Harpe, A. J. Baker. | Yates Center, F. M. Patterson. |

# The Course of Study

**Leading to the Degree of Bachelor of Arts.**

### Amount of Work Required.

To secure the degree of bachelor of arts the candidate is required to have completed 126 hours of work, of which 120 hours must be regular class work. The six additional hours required must be distributed as follows:

In the Freshman year, one hour of hygiene and one hour of gymnasium practice, the first term; and two hours of gymnasium practice the second term. In the Sophomore year, one hour of gymnasium practice in each term.

The sixty hours of class work required during the Freshman and Sophomore years must be distributed according to the plan described below.

The sixty hours of class work required during the Junior and Senior years may be elected by the candidate without any restriction, except that not more than twenty hours may be taken under one instructor.

### Amount of Work to be Carried at One Time.

Students of the College must be enrolled in not less than fourteen nor more than eighteen hours of work, but all applications for enrolment are subject to the approval of the Dean.

When the past record or current work of a student indicates that he is unable to carry advantageously the amount of work permitted by the above regulation, he may be limited in his enrolment to such extent as may be considered just in his case.

The Faculty urgently advises students to confine themselves to the average number of fifteen hours of class work, and thus devote four full years to the completion of their undergraduate work. Experience has shown that the crowding of the undergraduate course results in serious loss in the quality of the work accomplished. The excess over fifteen hours permitted by the rule should be used for making up entrance deficiencies.

### Required and Elective Courses.

The University regards the work of the first two years of the College course as essentially connected with the preparatory work as preliminary fundamental work necessary to the more specialized

courses of the last two years. The preparatory work and the work of the Freshman and Sophomore years are, therefore, considered together.

Fifteen units are required for admission, as given in detail on page 75. Of these fifteen preparatory units five and one-half are specifically required, six are required by group, while the remaining three and one-half are chosen without restriction from the list of entrance subjects.

During the first two years in the College sixty hours of class work, fifteen each term, must be completed. Five hours of such work constitute what is known as a "College unit." Three College units constitute the class work of each term. These twelve College units added to the fifteen entrance units make a total of twenty-seven units which must be completed, in the preparatory school and the College, before the end of the Sophomore year.

Of the twelve College units to be completed during the Freshman and Sophomore years, one, elementary rhetoric, is specifically required, unless it is offered for entrance as a fourth year of English. The remaining eleven units are to be chosen from the courses open to Freshmen and Sophomores on the conditions that not more than twenty hours may be taken in one department and that from each group a certain number of units must have been completed, either in the preparatory school or the College, before the end of the Sophomore year. The number of units so required is given with the names of the groups in the table following.

A course may not be chosen which substantially duplicates the work of a course which has been offered for entrance credit.

**Table of Courses Open to Freshmen and Sophomores. First Term.**

| Group. | Department. | No. | Course. | Hrs. | Days. | Time. |
|---|---|---|---|---|---|---|
| English Group: Four units required in preparatory school or College. | English Language. | 1 | Rhetoric | 2 | T., T. | 8, 9, 10:15, 11:15, 4:30. |
| | English Literature. | 1 | English Literature | 3 | M., W., F. | 8, 9, 10:15, 11:15, 4:30. |
| | | 3 | Eighteenth Century Literature | 3 | M., W., F. | 2:30. |
| | Public Speaking. | 1 | Spoken Discourse | 3 | M., W., F. | 9, 10:15. |
| | | 2 | Argument and Debate | 2 | T., T. | 9, 10:15. |
| Mathematics Group: Three units required in preparatory school or College. | Mathematics. | 2 | College Algebra | 3 | M., W., F. | 8, 9, 11:15, 2:30. |
| | | 3 | Plane Trigonometry | 2 | T., T. | 8, 9, 11:15, 2:30. |
| | | 4 | Analytics I | 2 | T., T. | 10:15, 11:15. |
| | | 5 | Calculus I | 3 | M., W., F. | 10:15, 11:15. |
| | | 6 | Analytics II | 2 | T., T. | 10:15, 1:30. |
| | | 7 | Calculus II | 3 | M., W., F. | 10:15, 1:30. |
| | | 8 | Calculus III | 3 | M., W., F. | 9. |
| Physical Science Group: Three units required in preparatory school or College. | Chemistry. | 1 | Elementary Chemistry I | 3 | M., W., F. | 11:15.* |
| | | 3 | Inorganic Chemistry | 5 | Daily. | 8–10. |
| | Physics. | 3 | General Physics | 3 | M., W., F. | 9. |
| | Geology. | 1 | *Elementary Geology* | 5 | Daily. | 11:15. |
| Biological Science Group: Three units required in preparatory school or College. | Zoology. | 1 | Elementary Zoology I | 5 | Daily. | 1:30–3:30. |
| | Botany. | 2 | Plant Histology | 5 | Daily. | 1:30–3:30. |
| | Entomology. | 1 | Elementary Entomology I | 3 | M., W., F. | 1:30–3:30. |
| | | 3 | Systematic Entomology I | 2 | T., T. | 1:30–3:30. |
| | Physiology. | 1 | Physiology | 5 | Daily. | 1:30. |
| | Philosophy. | 1 | *Elementary Psychology* | 3 | M., W., F. | 9. |
| | | 2 | *Introduction to Philosophy* | 2 | T., T. | 9. |
| Historical Group: Two units required in preparatory school or College. | European History. | 1 | English History I | 2 | T., T. | 8, 9, 10:15, 2:30. |
| | | 3 | Greek History | 2 | T., T. | 9, 11:15. |
| | | 5 | Mediæval History | 3 | M., W., F. | 8, 9. |
| | Economics. | 1 | Elementary Economics | 3 | M., W., F. | 3:30. |
| | | 2 | Economic History of England | 3 | M., W., F. | 9. |

Note.— Courses printed in italics are not open to Freshmen.

*Laboratory work, Monday, at 10:15 or 3:30.

**Table of Courses Open to Freshmen and Sophomores. First Term—Concluded.**

| Group. | Department. | No. | Course. | Hrs. | Days. | Time. |
|---|---|---|---|---|---|---|
| Foreign Language Group: Six units required in preparatory school or College. | Latin. | 3 | Vergil | 5 | Daily. | 8. |
| | | 4 | Cicero and Livy | 5 | " | 9. |
| | | 4*a* | Cicero's De Senectute | 3 | M., W., F. | 11:15. |
| | | 4*b* | Livy | 2 | T., T. | 11:15. |
| | | 5 | Horace's Odes | 3 | M., W., F. | 1:30. |
| | | 7 | Cicero's Letters | 3 | M., W., F. | 10:15. |
| | | 8 | History of Roman Literature | 2 | T., T. | 10:15. |
| | Greek. | 1 | Elementary Greek | 5 | Daily. | 9. |
| | | 3 | Homer's Iliad | 3 | M., W., F. | 9. |
| | | 4 | Thucydides | 2 | T., T. | 9. |
| | | 7 | Apology and Crito | 3 | M., W., F. | 11:15. |
| | | 8 | Sophocles | 2 | T., T. | 11:15. |
| | | 19 | Greek in English | 3 | M., W., F. | 10:15. |
| | | 22 | New Testament Greek II | 2 | T., T. | 10:15. |
| | | 27 | Greek Art I | 1 | T. | 4:30. |
| | German. | 1 | Outline of Grammar | 5 | Daily. | 8, 9, 10:15, 11:15, 1:30. |
| | | 2 | German Reader | 5 | " | 2:30. |
| | | 3 | German Prose | 5 | " | 8, 9, 10:15, 11:15, 3:30. |
| | | 4 | Schiller's Wallenstein | 5 | " | 1:30. |
| | | 5 | Composition | 3 | M., W., F. | 10:15. |
| | | 7 | Goethe's Iphigenie | 2 | T., T. | 11:15. |
| | | 9 | Schiller's Die Braut von Messina. | 2 | T., T. | 10:15. |
| | French. | 1 | Elementary French I | 5 | Daily. | 8, 9, 10:15, 11:15, 1:30. |
| | | 2 | Elementary French II | 5 | " | 9. |
| | | 3 | Modern French Prose | 3 | M., W., F. | 9, 10:15. |
| | | 4 | Composition | 2 | T., T. | 9, 10:15. |
| | | 7 | Moliere | 3 | M., W., F. | 11:15. |
| | | 8 | Composition and Conversation | 2 | T., T. | 11:15. |
| | Spanish. | 1 | Elementary Spanish I | 5 | Daily. | 10:15, 11:15. |
| | | 2 | Elementary Spanish II | 5 | " | 2:30. |
| | | 3 | Modern Spanish | 3 | M., W., F. | 2:30. |

**Table of Courses Open to Freshmen and Sophomores. Second Term.**

| Group. | Department. | No. | Course. | Hrs. | Days. | Time. |
|---|---|---|---|---|---|---|
| English Group: Four units required in preparatory school or College. | English Language. | 2 | Rhetoric | 3 | M., W., F. | 8, 9, 10:15, 11:15, 3:30. |
| | English Literature. | 2 | English Literature | 2 | T., T. | 8, 9, 10:15, 11:15, 3:30. |
| | | 3 | Eighteenth Century Literature | 3 | M., W., F. | 8, 10:15, 11:15, 2:30. |
| | Public Speaking. | 1 | Spoken Discourse | 3 | M., W., F. | 9, 10:15. |
| | | 2 | Argument and Debate | 2 | T., T. | 9, 10:15. |
| Mathematics Group: Three units required in preparatory school or College. | Mathematics. | 1 | Solid Geometry | 3 | M., W., F. | 1:30. |
| | | 2 | College Algebra | 3 | M., W., F. | 11:15, 2:30. |
| | | 3 | Plane Trigonometry | 2 | T., T. | 11:15, 2:30. |
| | | 4 | Analytics I | 2 | T., T. | 8, 9, 10:15, 11:15, 3:30. |
| | | 5 | Calculus I | 3 | M., W., F. | 8, 9, 10:15, 11:15, 3:30. |
| | | 6 | Analytics II | 2 | T., T. | 9, 10:15, |
| | | 7 | Calculus II | 3 | M., W., F. | 9, 10:15. |
| | | 8 | Calculus III | 3 | M., W., F. | 11:15. |
| | Civil Engineering. | 5 | Surveying | 5 | Daily. | 11:15. |
| Physical Science Group: Three units required in preparatory school or College. | Chemistry. | 2 | Elementary Chemistry II | 2 | T., T. | 11:15.* |
| | | 4 | Qualitative Analysis | 5 | Daily. | 8-10. |
| | Physics. | 4 | General Physics | 3 | M., W., F. | 9. |
| | Geology. | 1 | *Elementary Geology* | 5 | Daily. | 11:15. |
| Biological Science Group: Three units required in preparatory school or College. | Zoology. | 2 | Morphological Zoology | 5 | Daily. | 1:30-3:30. |
| | Botany. | 1 | Elementary Botany | 5 | Daily. | 1:30-3:30. |
| | | 3 | Cryptogamic Botany | 3 | M., W., F. | 3:30-5:30. |
| | Entomology. | 2 | Elementary Entomology II | 3 | M., W., F. | 1:30-3:30. |
| | | 4 | Systematic Entomology II | 2 | T., T. | 1:30-3:30. |
| | Philosophy. | 1 | *Elementary Psychology* | 3 | M., W., F. | 9. |
| | | 2 | *Introduction to Philosophy* | 2 | T., T. | 9. |
| Historical Group: Two units required in preparatory school or College. | European History. | 2 | English History II | 2 | T., T. | 8, 9, 10:15, 2:30. |
| | | 4 | Roman History | 3 | M., W., F. | 10:15, 11:15. |
| | | 6 | Modern European History | 3 | M., W., F. | 8, 9. |
| | Economics. | 1 | Elementary Economics | 2 | T., T. | 3:30. |
| | | 3 | Economic History United States | 3 | M., W., F. | 9. |
| | American History. | 1 | *United States Government* | 3 | M., W., F. | 9. |

NOTE.—Courses printed in italics are not open to Freshmen.

* Laboratory work, Thursday, at 10:15 or 3:30.

**Table of Courses Open to Freshmen and Sophomores. Second Term — Concluded.**

| Group. | Department. | No. | Course. | Hrs. | Days. | Time. |
|---|---|---|---|---|---|---|
| Foreign Language Group: Six units required in preparatory school or College. | Latin. | 2 | Cicero's Orations | 5 | Daily. | 1:30. |
| | | 3 | Vergil | 5 | " | 11:15. |
| | | 4a | Cicero's De Senectute | 3 | M., W., F. | 8. |
| | | 4b | Livy | 2 | T., T. | 8. |
| | | 5 | Horace's Odes | 3 | M., W., F. | 9. |
| | | 6 | Terence | 2 | T., T. | 9. |
| | | 9 | Horace (Satires and Epistles) | 2 | W., F. | 10:15. |
| | | 10 | Roman Private Life | 1 | M. | 10:15. |
| | | 11 | Prose Composition | 2 | T., T. | 10:15. |
| | Greek. | 2 | Anabasis | 5 | Daily. | 9. |
| | | 5 | Homer's Odyssey | 3 | M., W., F. | 9. |
| | | 6 | Herodotus | 2 | T., T. | 9. |
| | | 9 | Euripides and Æschylus | 3 | M., W., F. | 11:15. |
| | | 10 | Demosthenes | 2 | T., T. | 11:15. |
| | | 20 | Attic Greek | 2 | T., T. | 10:15. |
| | | 21 | New Testament Greek I | 3 | M., W., F. | 10:15. |
| | | 28 | Greek Art II | 1 | T. | 4:30. |
| | German. | 1 | Outline of Grammar | 5 | Daily. | 1:30. |
| | | 2 | German Reader | 5 | Daily. | 8, 9, 11:15, 1:30. |
| | | 3 | German Prose | 5 | " | 9. |
| | | 4 | Schiller's Wallenstein | 5 | " | 8, 9, 10:15, 11:15, 3:30. |
| | | 6 | Goethe's Faust | 3 | M., W., F. | 11:15. |
| | | 8 | Lessing's Nathan der Weise | 3 | M., W., F. | 11:15. |
| | French. | 1 | Elementary French I | 5 | Daily. | 11:15. |
| | | 2 | Elementary French II | 5 | " | 8, 9, 10:15, 11:15, 1:30. |
| | | 3 | Modern French Prose | 3 | M., W., F. | 8. |
| | | 4 | Composition | 2 | T., T. | 9, 10:15. |
| | | 5 | Prose and Poetry | 3 | M., W., F. | 9, 10:15. |
| | | 6 | Corneille and Racine | 2 | T., T. | 9. |
| | | 9 | Advanced Composition | 2 | T., T. | 11:15. |
| | Spanish. | 1 | Elementary Spanish | 5 | Daily. | 2:30. |
| | | 2 | Elementary Spanish II | 5 | Daily. | 10:15, 11:15. |
| | | 4 | Composition | 2 | T., T. | 2:30. |

# Courses of Instruction.

**Undergraduate and Graduate.**

## ANATOMY.

Associate Professor SUDLER.
Doctor SMITH.

EQUIPMENT.

The department occupies the lower floor of Medical Hall, and uses the lecture-room on the floor above. The dissecting-rooms are well lighted and comfortable. A reference library, models and specimens are provided. Students are furnished with a skeleton and well-preserved dissecting material, for which a fee is charged covering the actual cost of the material consumed. They are expected to furnish dissecting instruments and two gowns for use in the dissecting-room.

FOR ADVANCED UNDERGRADUATES AND GRADUATES.

1.—DESCRIPTIVE ANATOMY. Seven hours, 1st term, daily, 8 to 12:15. The first two weeks are occupied by a study of osteology, This is intended as an introduction to the study of anatomy. The vertebral column is considered from a morphological standpoint and the various bones studied by means of drawings and modeling. The balance of the term is devoted to dissection of the arm and leg and study of various preparations and models illustrating these parts. Associate Professor Sudler.

2.—DESCRIPTIVE ANATOMY. Eight hours, 2d term, daily, 8 to 12:15. During this term the abdomen, thorax and head are carefully dissected and studied. This course is a continuation of course 1. Associate Professor Sudler.

## ASTRONOMY.

(See Mathematics.)

## BOTANY.

Professor STEVENS.
Associate Professor BARBER.
Assistant Professor STERLING.

EQUIPMENT.

The department is provided with laboratories and essential working appliances for general morphology, plant histology, sytematic botany, herbarium, plant physiology, and bacteriology. The equip-

ment embraces microtomes, paraffin baths, etc., for histological work, simple and compound microscopes for each student, individual sets of apparatus for physiological experiments, and apparatus for carrying on bacteriological research according to the best methods. In connection with the laboratory for plant physiology is a workroom supplied with tools and machinery for the construction of apparatus as needed. There is a departmental library, in which are at hand the books of reference needed by the students in connection with their laboratory work, and the general library contains the leading botanical periodicals.

ADVICE AS TO CHOICE OF COURSES.

All courses in botany must be preceded by course 1 or its equivalent in other schools. Course 1 affords an introduction to the general field of botany. Students who enter the University with less than a high-school year in botany should consult with the department about the best first course in botany following their high-school preparation. Students who have completed a high-school year in botany may not take course 1 for credit, for they are supposed to have covered the ground of this course at the high school, and are prepared to enter courses 2, 3, 5, and 11, which are elementary in their several fields. The student should take course 2 following course 1 or its high-school equivalent, if he wishes to get an intimate acquaintance with the morphology and life-histories of the different groups of plants, from the lowest to the highest; or course 3, if he wants to acquire histological technique and to understand the cellular structure of plants and how plants are equipped to perform their physiological functions, and to prepare himself for plant physiology in course 4; or course 5, if he desires, first of all, to broaden his knowledge of the morphology and system of the flowering plants. If, after course 1, the student wishes to elect two courses that would best enrich his general information about plants, courses 2 and 3 should be chosen. If a basis for a knowledge of sanitation is desired, courses 2 and 11, or 12 in place of 11, should be selected. Courses 1, 2, 3, 4 and 5 are fundamental to scientific plant culture. Course 13 is designed to help those students who want a knowledge of the essentials of plant culture and the principles of selecting and arranging plants in the laying out and planting of grounds. Students who are preparing to teach botany in high schools should take courses 1, 2, 3, 4, and 5.

COURSES FOR UNDERGRADUATES ONLY.

1.—Elementary General Morphology. Five hours, 2d term, at 1:30 to 3:30. An introduction to the forms and parts of plants, and the way typical plants perform their functions and conform to

their environment. This course, or its equivalent in other schools, is a prerequisite to all succeeding courses in botany. Laboratory work ten hours a week, reading, recitations, and lectures. Open to all students of the College. Professor Stevens, Associate Professor Barber, and Assistant Professor Sterling,

2.—Plant Histology. Five hours, 1st term, at 1:30 to 3:30. A study of plant tissues, with special reference to their development and functions; plant products, their origin and physiological and biological significance; histological technique. Laboratory work ten hours a week, recitations, and lectures. Open to all students of the College who have taken course 1 or its equivalent. Professor Stevens.

3.—Cryptogamic Botany. Three hours, 2d term, Monday, Wednesday, and Friday, at 3:30 to 5:30. The life-histories of cryptogams, and an introduction to the study of reproduction of phanerogams. Laboratory work six hours a week, reading, and lectures. Open to all students who have taken course 1 or its equivalent. Associate Professor Barber and Assistant Professor Sterling,

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

4.—Experimental Plant Physiology. Five hours, 2d term, at 3:30 to 5:30. Laboratory work ten hours a week, reading, and conferences. Open to Juniors and Seniors who have taken course 3. Professor Stevens.

5.—Systematic Botany. Phanerogams. Three hours or five hours, 1st term, Monday, Wednesday, and Friday, or Monday, Tuesday, Wednesday, Thursday, and Friday, 10:15 to 12:15. Laboratory work six hours a week, or ten hours. Open to Juniors and Seniors who have taken course 1 or its equivalent. Associate Professor Barber.

6.—Systematic Botany. Cryptogams. Two hours, 1st term, Tuesday and Thursday, at 10:15 to 12:15. Laboratory work four hours a week. Open to Juniors and Seniors who have taken course 2 or its equivalent. Associate Professor Barber.

7.—Problems in Taxonomy. Three hours, five hours, or ten hours, 1st or 2d term, or both terms, by appointment. Plant relationships and classification, in which selected groups of plants are critically studied. Associate Professor Barber.

8.—Problems in the Morphology of Thallophytes, Bryophytes, and Pteridophytes. By appointment, three hours, five hours, or ten hours, 1st or 2d term, or both terms. Laboratory work and reading. Associate Professor Barber.

9.—Problems in the Morphology of Spermatophytes. By

appointment, three hours, five hours, or ten hours, 1st or 2d term, or both terms. A study of the forms of plant members under varying environment. Laboratory work, field-work, and reading. Professor Stevens.

10.—Problems in Histogenesis. By appointment, three hours, five hours, or ten hours, 1st or 2d term, or both terms. A study of the development of the tissues in selected plants. Professor Stevens.

11.—Bacteriology. Five hours, 2d term, Monday, Tuesday, Wednesday, Thursday, and Friday, at 8 to 10. Bacteriological technique. Pathogenic bacteria and other forms of economic importance. Laboratory work ten hours a week, reading, and lectures. Associate Professor Barber.

12.—Bacteriology for Domestic Science. Two hours, 2d term, Tuesday and Thursday, or may be taken daily for half a term, 8 to 10. To include a treatment of the more important bacteria of food and water and the prevention of the spread of infectious diseases. Associate Professor Barber.

13.—Domesticated Plants. Two hours, 1st term, Tuesday and Thursday, 3:30 to 4:30. The origin and amelioration of cultivated plants. Methods of propagation and culture of trees, shrubs, herbaceous perennials, and annuals. The planting of private and public grounds. Readings and lectures and demonstrations. Professor Stevens, Associate Professor Barber, and lecturers on the various phases of the subject.

COURSES FOR GRADUATES ONLY.

14.—Structure and Development of Cryptograms. By appointment, five hours or ten hours, throughout the year. Bacteria or any group may be made a special study. Associate Professor Barber.

15.—Morphology and Physiology of the Plant Cell. By appointment, five hours or ten hours, 1st or 2d term, or both terms. A study of cell forms, their adaptation to specific functions, and their behavior under varying environment; nuclear and cell division; reproduction. Professor Stevens.

16.—Plant Ecology. By appointment, five hours or ten hours, throughout the year. The relation of plants to their environment. Field-work and reading. Warming's and Schimper's texts and current literature. Professor Stevens.

17.—Botanical Seminary. One hour, by appointment. Review and discussion of current botanical work. Reports on assigned subjects. Open to graduates and advanced undergraduates.

## CHEMISTRY.

Professor BAILEY.
Associate Professor CADY.
Assistant Professor MCFARLAND.
Assistant Professor CURTIS.
Assistant Professor BUSHONG.
Mr. FORD.
Mr. FARAGHER.
Mr. ALLEN.
Mr. CROSS, Fellow.

### EQUIPMENT.

The Chemistry Building, which was completed in 1900, affords abundant laboratory space for carrying on the work. The rooms are furnished with gas, water, vacuum for rapid filtering, distilled water, and compressed air. The balance-rooms on each floor, storerooms, and instructors' rooms, conveniently located, afford every facility for scientific research. The laboratory for general chemistry accommodates 140 students working at one time, or 280 in two divisions; the qualitative laboratory has a sufficient number of desks for 72 students working at the same time, or 144 in two divisions; the quantitative laboratory accommodates 80 students, and the organic laboratory 72 students working at one time, or 144 in two divisions. The large lecture-room will seat over 300. In addition to these rooms, there are numerous smaller laboratories and classrooms that will each accommodate from ten to fifty students. Each student is assigned a desk and is loaned apparatus for his individual use. Hoods to carry off injurious gases are placed between all the windows in the large laboratories, and, with a constant pressure of air produced by a fan blower, abundant ventilation is secured. A liquid-air plant of unusual efficiency has been installed, which affords excellent facilities for making researches at extremely low temperatures. The assay laboratory, located in the basement, is provided with the usual muffle and crucible furnaces, and well stocked with ores for experimental use.

For illustration and demonstration in lectures there are supplied projection lanterns, cylinders of compressed gases, a liquid-air machine, apparatus for testing coal-oil, gas, alcohol; standard sets of thermometers and hydrometers, combustion furnaces, analytical balances; mineral collections; 800 specimens for illustrating organic chemistry; a mineral-water collection; sets of specimens for illustrating the manufacture of china, leather, zinc, glass, fats, soap, alcoholic liquors, gunpowder, fertilizers, white lead, acids, oils, cements, etc. In addition to these, the apparatus for use in physical chemistry has been recently increased by the purchase of

several hundred dollars' worth of electrical instruments and apparatus for thermochemistry, for the determination of molar weights, and for the measurement of the critical constants of liquids, so that the department is very fairly equipped for work in this line.

ADVICE AS TO CHOICE OF COURSES.

In the selection of courses to be pursued in chemistry, it is suggested that those who desire to study for medicine select courses 1, 2, 3, 4, 6, 9, 12; for teaching, courses 1, 2, 3, 4, 6, 7, 8, 17, 23, 24; for commercial chemistry, courses 1, 2, 3, 4, 5, 8, 9, 10, 11, 15, 16, 21, 22; for mining and metallurgy, courses 1, 2, 3, 4, 8, 9, 16, 21, 22; for business or general culture, courses 1, 2, 3, 4, 5, 17.

Those who desire to take graduate work should first make up undergraduate work to the point where they can do the advanced work satisfactorily.

COURSES FOR UNDERGRADUATES ONLY.

1.—ELEMENTARY CHEMISTRY I. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15; laboratory work Monday, 10:15 to 12:15, or 3:30 to 5:30. A study of the chemical elements and their compounds. Experimental lectures, recitations, and laboratory work. Remsen's Chemistry, Briefer Course. Open to all students in the College. Professor Bailey and Assistant Professor Curtis.

2.—ELEMENTARY CHEMISTRY II. Two hours, 2d term, Tuesday and Thursday, at 11:15; laboratory work Thursday, 10:15 to 12:15, or 3:30 to 5:30. A continuation of course 1. Open to all students of the College who have completed course 1. Professor Bailey and Assistant Professor Curtis.

3.—ADVANCED INORGANIC CHEMISTRY. Five hours, daily, 1st term, 8 to 10. Lectures, recitations, and laboratory work. Ostwald's Principles of Inorganic Chemistry, translated by Alexander Findlay. Open to all students of the College who have taken courses 1 and 2. Associate Professor Cady and Mr. Faragher.

4.—QUALITATIVE ANALYSIS. Five hours, daily, 2d term, 8 to 10. Lectures and laboratory work. Bailey and Cady's Guide to the Study of Qualitative Analysis. Open to all students of the College who have taken course 3. Associate Professor Cady and Mr. Faragher.

5.—TECHNICAL CHEMISTRY. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. This course includes a technical study of the manufacture of acids, alkalies, explosives, glass, pottery, porcelain, mortars, cements, paper, alcohol, vinegar, leather;

also of dyeing, calico printing, and similar industries. Thorp's Outlines of Industrial Chemistry. Open to Juniors and Seniors who have taken courses 1 and 2. Professor Bailey.

6.—SANITARY AND APPLIED CHEMISTRY. Two hours, 1st term, Tuesday and Thursday, 10 : 15 to 12 : 15. A practical study of the atmosphere; domestic fuels, heating, and ventilation; artificial lighting; water-supplies and methods of purification and filtration; sewage; the use of soap, disinfectants, and antiseptics. Bailey's Sanitary and Applied Chemistry, part I. Lectures, recitations, and laboratory work. Open to Juniors and Seniors who have taken the equivalent of courses 1 and 2. Professor Bailey.

7.—THE CHEMISTRY AND PHYSIOLOGY OF FOODS. Three hours, 2d term, Monday, Wednesday, and Friday, at 1 : 30 to 3 : 30. A study of food-supply, its source, composition, liability to falsification and adulteration; preparation and methods of preservation. This course will also include a study of dietetics from a chemical standpoint, balanced rations, economy of foods, and the digestive processes. In connection with the latter topic, lectures will be given by Professor Sayre on digestive ferments. Bailey's Sanitary and Applied Chemistry, part II. Lectures, recitations, and laboratory work. Open to Juniors and Seniors who have taken the equivalent of courses 1 and 2. Professor Bailey and Professor Sayre.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

8.—QUANTITATIVE ANALYSIS. Five hours, 1st term, daily, 3:30 to 5:30; or 2d term, daily, 8 to 10. Lectures and laboratory work. Must be preceded by course 4. Professor Bailey and Assistant Professor Curtis, 1st term; Assistant Professor Curtis, 2d term.

9.—QUANTITATIVE ANALYSIS. Advanced course. Five hours, 1st term, daily, at 3:30 to 5:30; or 2d term, daily, 8 to 10. Must be preceded by course 8. Either of the subjects mentioned below may be taken: (*a*) Chemistry of the cement industry; (*b*) chemistry of the packing-house industries; (*c*) iron analysis. Professor Bailey, 1st term; Assistant Professor Curtis, 2d term.

10.—GAS ANALYSIS. Two hours, 1st term, Tuesday and Thursday, by appointment. A laboratory course in the quantitative determination of common gases, analysis of gaseous mixtures, flue gases, natural gas, etc. Both exact methods of analysis and technical methods will be employed. Gill's Gas Analysis or Hempel's Gas Analysis. Must be preceded by course 8. Assistant Professor McFarland.

11.—OIL ANALYSIS. Three hours, 2d term, Monday, Wednesday, and Friday, by appointment. A laboratory course in the

analysis of animal, vegetable or mineral oils. Determination of the specific gravity, viscosity, and other constants. Distillation, as applied to mineral oils. Must be preceded by course 8. Assistant Professor Bushong.

12.—ELECTROLYTIC ESTIMATION OF METALS. Two hours, 2d term, by appointment. A laboratory course in the practical work of analysis by electrolysis, including the use of the rotating cathode. Must be preceded by course 8. Assistant Professor Curtis.

13.—ANALYSIS OF BOILER FEED-WATERS. Two hours, 1st term. Optional for engineers or College students. Must be preceded by course 8. Professor Bailey.

14.—SUGAR ANALYSIS. Two and one-half hours, by appointment, 2d term (*b*). A laboratory course. Must be preceded by course 8. Professor Bailey.

15.—WATER ANALYSIS. Three hours, 2d term, by appointment. A study of the mineral and sanitary analyses of waters. Mason's Water Analysis, and volume VII (Mineral Waters), University Geological Survey of Kansas. A laboratory course. Must be preceded by course 8. Assistant Professor Curtis.

16.—ASSAYING AND METALLURGICAL ANALYSIS. Five hours, 2d term, daily, 3:30 to 5:30, and by appointment. This is a course in the fire assay of the ores of gold, silver, and lead, followed by the volumetric analysis of the ores of copper, lead, iron, zinc, manganese, etc., and the analysis of bullion. Lectures and laboratory work. Furman's Manual of Practical Assaying. Must be preceded by course 8 and mineralogy 1. Assistant Professor McFarland and assistant.

17.—ORGANIC CHEMISTRY. Five hours, 2d term, daily, 3:30 to 5:30. A study of the hydrocarbons and their derivatives. Lectures, recitations, and laboratory work. Must be preceded by courses 1 and 2. Assistant Professor Bushong and assistants.

18.—ORGANIC CHEMISTRY. Two hours, 2d term, Tuesday and Thursday, 3:30 to 5:30. A lecture and recitation course. This is designed for those students who do not care to take so complete a course as 17. It will include lectures and recitations, without laboratory work. Must be preceded by courses 1 and 2. Assistant Professor Bushong and assistants.

19.—ORGANIC PREPARATIONS. Five hours, 1st term, daily, 10:15 to 12:15. A special study of organic synthetical methods. Lectures and laboratory work. Practical Methods of Organic Chemistry, Gattermann, translated by Shober. Must be preceded by course 17. Assistant Professor Bushong.

20.—Organic Preparations, Advanced. Five hours, either term, by appointment. A continuation of the work of the previous course, with ultimate organic analysis for carbon, hydrogen, nitrogen, sulfur, and the halogens. Must be preceded by course 19. Assistant Professor Bushong.

21.—Metallurgy I. Five hours, 1st term, daily, at 11:15. General metallurgy and metallurgy of iron and steel. Properties of metals and alloys, metallurgical terms and processes, furnace types, refractory materials and slags, fuels and thermal measurements, calculation of furnace charges, etc., followed by a study of iron and its ores; methods for manufacture of pig iron and wrought iron; manufacture of steel by crucible, Bessemer and open-hearth processes, special steels and special processes; heat treatment and metallography of steel. Must be preceded by chemistry 3. Required of mechanical and chemical engineers, Senior; optional in the College and for mining engineers, Senior. Assistant Professor McFarland.

22.—Metallurgy II. Five hours, 2d term, daily, at 11:15. Metallurgy of lead, zinc, and copper, followed by metallurgy of silver, gold, mercury, and tin. Study of principal ores and methods of extraction and refining, amalgamation, chlorination and cyanide processes, pyritic smelting, etc. Must be preceded by chemistry 3. Required of mining engineers, Senior; optional in the College and for chemical engineers, Senior. Assistant Professor McFarland.

23.—Physical Chemistry. Five hours, 1st term, daily, at 10:15. A course paying special attention to electrochemistry. Lectures and laboratory work. Must be preceded by chemistry 8, or by chemistry 2, and physics 4 and 5, and mathematics 5. Associate Professor Cady.

24.—Physical Chemistry. Five hours, 2d term, daily, at 10:15. A general course in theoretical and physical chemistry. Lectures and laboratory work. Must be preceded by chemistry 8 or chemistry 2 and physics 4 and 5 and by mathematics 5. Associate Professor Cady.

25.—Electrochemistry. Five hours, 2d term, daily, by appointment. The study of reactions involving oxidation and reduction, electrosynthesis and decompositions, the preparation of chemicals, the reduction of metals from their ores, and the purification of metallurgical products. A laboratory course, with lectures on the theory and practice of electrochemistry. Must be preceded by course 23. Associate Professor Cady.

COURSES FOR GRADUATES ONLY.

26.—ANALYTICAL CHEMISTRY. Five hours, either term, by appointment. A research course. This may include the investigation of some problems in metallurgical or manufacturing processes, the complete investigation of some proposed water-supply, the development of new methods in analytical chemistry, or a study and comparison of methods already in use. Professor Bailey.

27.—ORGANIC CHEMISTRY. Five hours, either term, by appointment. A research course. This course offers to those who have proper preparation a chance for a more extended study and original investigation. Assistant Professor Bushong.

28.—HISTORY OF CHEMISTRY. Three hours, 2d term, by appointment. A course in history of chemistry and the development of chemical theories. Recitations, library work, and the presentation of reports. Offered in 1906–'07 and alternate years thereafter. Professor Bailey.

29.—PHYSICAL CHEMISTRY. Five hours, either term, by appointment. A research course extending over two or more terms. An opportunity is offered, to those who are sufficiently advanced, to carry on investigations in this most recently developed branch of chemistry. Associate Professor Cady.

## ECONOMICS.

(See Sociology.)

## DRAWING AND DESIGN.

Professor GRIFFITH.

EQUIPMENT.

The studios of the department of drawing on the third floor of Snow Hall are well equipped with a great many casts from the antique; books and plates upon the theory and history of ornament; a fine printing-press, designed for color-printing, and used by the students to duplicate their designs; easels and drawing-boards. The classical museum and the museum of natural history offer an abundance of material for the use of students in design.

ADVICE AS TO CHOICE OF COURSES.

The following courses are optional: Technical students, to whom some drawing is essential, are advised to take course 1. Students wishing training in artistic preception and graphic expression, for its general culture value, must take course 1, followed by 3 and 4.

COURSES FOR ADVANCED UNDERGRADUATES.

1.—FREE-HAND DRAWING. Three hours, 1st term, Monday, Wednesday, and Friday, 1:30 to 3:30. Drawing with pencil and charcoal from the cast and objects in still life, which aims to teach the student to construct form in a simple and correct manner; drawing with pen and ink and water-colors for illustrative and reproductive processes. Professor Griffith.

2.—FREE-HAND DRAWING. Three hours, 2d term, Monday, Wednesday, and Friday, 1:30 to 3:30. A continuation of course 1. Professor Griffith.

3.—PRINCIPLES OF ART. Two hours, 1st term, Tuesday and Thursday, at 1:30. A lecture course on the theory of the technical beauties of a work of art, presenting the principles of composition and perspective, together with considerations of technical processes. The object of the course is to give the student a critical knowledge necessary to understand and more fully enjoy a work of art. Professor Griffith.

4.—ORNAMENTAL DESIGN. Two hours, 2d term, Tuesday and Thursday, 3:30 to 5:30. The anatomy of pattern and the planning of ornament. Must be preceded by course 1. Professor Griffith.

5.—ORNAMENTAL DESIGN. Two hours, 1st term, Tuesday and Thursday, 3:30 to 5:30. The application and history of ornament. Must be preceded by course 4. Professor Griffith.

## EDUCATION.

Professor OLIN.
Professor JOHNSON.
Assistant Professor PELO.
Mr. COPE, Fellow.

EQUIPMENT.

The library facilities for the work of this department include about 1500 volumes under the title "Education," and a large number of volumes listed under other titles. Among these volumes are complete sets of the Reports of the Commissioner of Education, Horace Mann's Reports, the International Education Series, the Great Educators Series, etc. There are files of the *Pedagogical Seminary*, the *Educational Review*, the *School Review*, and other high-class educational periodicals. The department has a museum room on the third floor of the Chemistry Building, in which are found several hundred volumes of school-books, ancient and modern, pamphlets, and a limited number of samples of school furnishings and apparatus. Weekly sessions of the conference in education are

held for the consideration of current literature and discussions of topics in education. These meetings are open to undergraduates, and attendance upon them is required of graduate students in education.

ADVICE AS TO CHOICE OF COURSES.

Courses 1, 2 and 3 are recommended for all students in edcuation. In addition to these, for purposes of general culture, courses 8, 9 and 10 are recommended; the other courses offered are more for technical study and the practical application of educational principles, and, in general, their numbers indicate the order of their advancement. Students intending to qualify for the University teacher's diploma are recommended to begin their work in education in the Junior year.

COURSES FOR UNDERGRADUATES ONLY.

1.—History of Ancient and Mediæval Education. Three hours, 1st term, Monday, Wednesday, and Friday, at 3:30. A survey of typical movements in education, the development of systems, and the work of great educators. Professor Olin.

2.—History of Modern Education. Three hours, 2d term, Monday, Wednesday, and Friday, at 3:30. This is a continuation of course 1, but may be taken separately. It deals with the period from the revival of learning to the present time. Professor Olin.

4.—School Law and Administration. Two hours, 1st term, Tuesday and Thursday, at 3:30. A study of the Kansas laws relating to the maintenance, supervision and administration of schools. Comparison with school laws of other states. Individual studies of special state schools of Kansas and city systems of other states. Professor Olin.

5.—School Economy. Two and one-half hours, 1st half of 2d term, daily, at 2:30. Conditions and principles essential to efficient school work, school hygiene, organization and authorities of the school, financial support, courses of study, government, library management. Required reading, observation work, class discussions, and lectures. Open to Juniors and Seniors who have taken courses 3 and 1 or 2. Assistant Professor Pelo.

6.—Methods of Instruction. Two and one-half hours, 2d half of 2d term, daily, at 3:30. Rational basis of the teaching process. Examination of the cardinal Herbartian doctrines. Illustrations from typical elementary-school subjects. Observation in elementary and secondary schools. Open to Juniors and Seniors who have taken courses 3 and 1 or 2. Assistant Professor Pelo.

7.—School Supervision. Three hours, 1st term, Monday,

Wednesday and Friday, at 9. This course is largely based on the texts of Payne and Pickard, and the reports of the Committees of Twelve and Fifteen. Reports, class discussions, and lectures. Assistant Professor Pelo.

13.—THE SECONDARY SCHOOL. Two and one-half hours, 2d half of 2d term, daily, at 9. A study of the development, equipment, curriculum and administration of the American high school. (Not given in 1906–'07.) Assistant Professor Pelo.

14.—THE PRINCIPLES OF EDUCATION. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. A systematic treatment of the factors of education, physical, intellectual, and social, and their relation to the teaching process. Largely based on the texts of Harris, Butler, and Thorndyke. Lectures, required reading, reports, and class discussions. Open to Juniors and Seniors who have taken course 1 or 2. Assistant Professor Pelo.

COURSES FOR GRADUATES AND ADVANCED UNDERGRADUATES.

3.—PHILOSOPHY OF EDUCATION. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. Library work, based mainly on Rosenkranz, Compayré, and Horne. Required reading, reviews, and special studies. Assistant Professor Pelo.

8.—COMPARATIVE STUDY OF EDUCATIONAL SYSTEMS. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. A study of the elements of the school systems of England, France, and Germany, and a comparison with the systems of this country. Professor Olin.

9.—EDUCATIONAL CLASSICS. Two hours, 1st term, Tuesday and Thursday, at 2:30. A critical study of the educational doctrines found in Plato's Republic, Quintilian's Institutes of Oratory, and Locke's Thoughts Concerning Education. This course should be preceded by course 1. Assistant Professor Pelo.

10.—EDUCATIONAL CLASSICS. Two hours, 2d term, Tuesday and Thursday, at 2:30. This is a continuation of course 9, but may be taken separately. It involves a critical study of the educational doctrines found in Rousseau's Emile, Herbart's Science of Education, and Herbert Spencer's Education. Professor Olin.

12.—SEMINARY. Five hours, 2d term, daily, hours by appointment. Individual investigation of special subjects in educational philosophy, institutions, and administration. Open to students who have done previously at least eight hours' work in the department. Assistant Professor Pelo.

COURSE FOR GRADUATES ONLY.

11.—PROBLEMS OF ORGANIZATION, MANAGEMENT AND METHOD IN EDUCATIONAL SYSTEMS. Five hours, 2d term, daily, hours by appointment. Library work, reports, discussions, and lectures. Not open to students who have taken courses 5 and 6. Professor Olin.

## ENGLISH LANGUAGE AND RHETORIC.

Professor HOPKINS.
Professor DUNLAP.
Associate Professor O'LEARY.
Associate Professor WHITCOMB.
Assistant Professor RAYMOND.
Assistant Professor LYNN.
Assistant Professor BRYANT.
Assistant Professor SISSON.
Assistant Professor GRAY.
Mr. HARGER.
Miss GARDNER.
Miss RENN, Fellow.

EQUIPMENT.

Apart from a number of portraits and historical maps, the equipment of this department is the University library, in which are collections of volumes and periodicals relating especially to rhetoric and composition, to English style and English literary criticism, to journalism and newspaper work in general, and to English philology. Among these are an especially fine collection of important dictionaries, and complete sets of journals, such as *Anglia* and *Englische Studien*, and of such publications as those of the Chaucer Society, the Early English Text Society, and the English and the American Dialect Societies. The number of volumes pertaining more directly to the subjects of this department and not included in the total for English literature is above 1000; and the total for all departments of English is above 5000. A large reading-room is reserved for the use of students in these departments, under the charge of a special librarian.

ADVICE AS TO CHOICE OF COURSES.

Every student should confer with an instructor with reference to the general arrangement of his studies as early in his course as he can, and should take especial notice of the fact that certain elementary and fundamental courses scheduled for Freshman and Sophomore years, or their equivalent, must be completed before he can be admitted to any other English courses whatever. These introductory courses are rhetoric 1 and 2 and English literature 1, 2, and 3.

Few undergraduate students are justified in confining their attention to any single department of English study; but any student may properly shape his work with reference to future occupation or profession. Major work in English composition may be advisable for those contemplating a journalistic or literary career, to include a selection from such courses as rhetoric 3, 4, 5, 6, 7, 8, 17, 18, 19, 20, 21, 22, and 23. Major work in English language may sometimes be desirable for intending teachers who wish to make especially thorough preparation for their work, to include a selection from such courses as 9, 10, 11, 12, 15, and 16; and no intending teacher should fail to take at least one elementary course in English language, such as 9, 10, 11, or 25. At the same time, either class of students should give all possible attention to English literature also; the first class electing the subjects which bear most directly upon their special interests; and the second class endeavoring to come into touch with subjects unlike in character and method, and presented by different instructors, in order to make the range of their experience as wide as possible. Conversely, every student of English literature should give part of his time to courses in English language, many of which, such as 9, 10, 13, 14, 15, and 16, are in character literary as well as linguistic.

In the following list, courses 1–8, 17–23 and 26 belong to the rhetorical group; courses 9–16 and 25, to the linguistic. Of these courses, 1, 2, 3, 4, 5 and 6 are fundamental, as explained below; courses 7 and 8 are intended especially for journalists, and are required in the general course in journalism outlined in this catalogue. Courses 17–23 are for those interested in advanced English composition and in literary work; courses 24–26 are special courses for teachers; and courses 9–16 for advanced students, whether interested in teaching, language, or literature. The proper relation and succession of these courses are shown in the descriptions following. Courses which are continuations of preceding courses cannot be taken by students who have not had the preceding course or its equivalent, unless it is so stated.

COURSES FOR UNDERGRADUATES ONLY.

1.—Rhetoric and English Composition. Two hours, 1st term, Tuesday and Thursday, at 8, 9, 10:15, 11:15, 3:30, and 4:30. Outlines of rhetoric, with oral and written exercises and themes. Required of all Freshmen in the College. Assistant Professors Bryant and Gray and assistants.

2.—Rhetoric and English Composition. Three hours, 2d term, Monday, Wednesday, and Friday, at 8, 9, 10:15, 11:15, 2:30, and 3:30. A continuation of course 1. Required of all Freshmen

in the College. Assistant Professors Bryant and Gray and assistants.

3.—NARRATION AND DESCRIPTION. Three hours, 1st term, Monday, Wednesday, and Friday, at 8. A study of general principles, with exercises. A fundamental course, leading to 7 and 8, or to the group 17–23, inclusive. Associate Professor O'Leary.

4.—NARRATION AND DESCRIPTION. Two hours, 2d term, Tuesday and Thursday, at 8. A continuation of course 3. Associate Professor O'Leary.

5.—EXPOSITION AND ARGUMENT. Two hours, 1st term, Tuesday and Thursday, at 8. A study of general principles, with exercises and briefs. A fundamental course, leading to 7 and 8, to 17–23, inclusive, or to courses in public speaking and debate. Assistant Professor Sisson.

6.—EXPOSITION AND ARGUMENT. Three hours, 2d term, Monday. Wednesday, and Friday, at 8. A continuation of course 5, but open also to students who have not had course 5. Assistant Professor Sisson.

7.—NEWSPAPER WRITING. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. A survey of all departments of newspaper work, with practice in reporting, in editorial and feature writing, and in proof-reading, in connection with local and other newspapers. One or more of the subjects named may be chosen for special attention. Must be preceded by courses 3 and 4, 3 and 5, or 5 and 6, and by one or more courses in English literature in addition to 1, 2, and 3. Mr. Harger and Professor Hopkins.

8.—NEWSPAPER WRITING. Two hours, second term, Tuesday and Thursday, at 10:15. A continuation of course 7, with assignment to newspaper duty and the special study of some department of newspaper making, with thesis. Discussion of the newspaper as a whole, with exercises in its various departments as preparation for actual work. Preparation of manuscripts, practical drill in editing "copy," study of newspaper terms. Conference course. Mr. Harger and Professor Hopkins.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

9.—ELEMENTARY OLD ENGLISH (Anglo-Saxon). Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Introductory course in Old English grammar, with reading of West Saxon texts, chiefly prose. Should be preceded by courses 1 and 2 in German or their equivalent. Required for admission to all advanced courses in English language, except as otherwise specified. Professor Hopkins.

10.—Beówulf. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. Must be preceded by course 9. Professor Hopkins.

11.—History of the English Language. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. Elements of English philology, including sources and development of the language, its pronunciation, inflections, and syntax. May with advantage be preceded by course 9. Assistant Professor Bryant.

12.—General Introduction to Phonetics. Two hours, 2d term, Tuesday and Thursday, at 10:15. Open to advanced students of any language. Assistant Professor Bryant.

13.—Early English. Two hours, 1st term, Tuesday and Thursday, at 10:15. Language and literature of the thirteenth century; study of selected texts, with required thesis. Open to students who have had elementary Old English. Professor Hopkins.

14.—Middle English. Two hours, 2d term, Tuesday and Thursday, at 9. Language and literature of the fourteenth century, exclusive of Chaucer. Open to students who have not had Old English. Professor Dunlap.

15.—The Cædmonian Poems I. One hour, 1st term, Thursday, at 10:15. Must be preceded by course 9. Professor Dunlap.

16.—The Cædmonian Poems II. One hour, 2d term, Thursday, at 10:15. A continuation of course 15. Professor Dunlap.

17.—Literary Criticism. Two hours, 1st term, Tuesday and Thursday, at 9. Study of the principles and methods of criticism through its history and literature, with practice in book reviewing and critical writing. Professor Hopkins.

18.—Literary Criticism. Two hours, 2d term, Tuesday and Thursday, at 9. A continuation of course 17, with special attention to the history of criticism in England and America. Library and conference course, with required thesis. Associate Professor Whitcomb.

19.—The Development of English Prose. Two hours, 1st term, Tuesday and Thursday, at 11:15. A study of the development of prose style from the beginning of the sixteenth century to the end of the eighteenth. Lecture and conference course, with required reading reports, and thesis. Assistant Professor Sisson.

20.—Versification. One hour, 1st term, Tuesday, at 11:15. Study of the forms and principles of English verse. Professor Hopkins.

21.—Versification. One hour, 2d term, Wednesday, at 11:15.

The history of English verse. A continuation of course 20. Professor Hopkins.

22.—Thesis Writing. One hour, 2d term, Tuesday, at 8. Practice in gathering and handling material; investigating and testing. Assistant Professor Sisson.

23.—Prose Invention. Two hours, 2d term, Tuesday and Thursday, at 11:15. General survey of theories of literary art, with practice in original production. Library and conference course, with required thesis. Professor Hopkins.

24.—Methods of Teaching English. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. Principles of teaching English composition, English literature, and English language. Lectures, library reading, illustrative and review work. Must be preceded by 3 and 4, 3 and 5, 3 and 6, or 5 and 6, and by at least one three-hour course in English literature, in addition to 1, 2, and 3. Additional credit up to five hours may be allowed when practice teaching is done; only a small amount of such teaching, however, can usually be provided. Associate Professor O'Leary.

25.—Old and Middle English Grammar. Two hours, 2d term, Tuesday and Thursday, at 1:30. An elementary course, designed to accompany 24, for intending teachers who have not taken courses 9 or 11. Offers a rapid-reading survey of the earlier forms of the English language. Some representative texts are read. Especial attention is given to the relations between early and modern grammatical forms. Associate Professor O'Leary.

26. History of the Literature and the Teaching of Rhetoric in English. One hour, 2d term, Friday, at 3:30. Lectures, library reading, and the preparation of a thesis. Associate Professor O'Leary.

## ENGLISH LITERATURE.

**Professor Dunlap.**
**Professor Hopkins.**
**Associate Professor Whitcomb.**
**Associate Professor O'Leary.**
**Assistant Professor Raymond.**
**Assistant Professor Lynn.**
**Assistant Professor Bryant.**
**Assistant Professor Gray.**

### EQUIPMENT.

The department of English literature is well supplied with maps and with a large number of portraits. The library has 4000 volumes upon English literature. There are 624 volumes in the Shakspere alcove. The department also possesses the Chaucer Society pub-

lications, the Spenser Society, the Shakspere Society, the New Shakspere Society, the Shakspere Jahrbuch, *facsimiles* of the quartos, *facsimiles* of the first folio, the Shelley Society, and the Browning Society. The seminary room is large and commodious, and is well adapted for study and investigation.

ADVICE AS TO CHOICE OF COURSES.

The courses in English literature are designed to meet the needs of various classes of students. There are courses for the general student, for the student of literary history, for the student of journalism, for the student who intends to do graduate work in English literature, and for the student who intends to teach English literature. The instructors invite conference with students, and will assist in planning work to meet special cases.

COURSES FOR UNDERGRADUATES ONLY.

1.—ENGLISH LITERATURE. Three hours, 1st term, Monday, Wednesday, and Friday, at 8, 9, 10:15, 11:15, 3:30, and 4:30. General history, supplemented with class study of representative authors and with required library reading. Text-books, Simond's English Literature and Pancoast's Standard English Poems. Open to all students of the College. Associate Professor Whitcomb and Assistant Professors Bryant and Gray.

2.—ENGLISH LITERATURE. Two hours, 2d term, Tuesday and Thursday, at 8, 9, 10:15, 11:15, 2:30, and 3:30. A continuation of course 1. Associate Professor Whitcomb and Assistant Professors Bryant and Gray.

3.—ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY. Three hours. Given both terms. Monday, Wednesday, and Friday, 1st term, at 2:30; 2d term, at 8, 10:15, 11:15, and 2:30. A study of the period 1660–1780. Gosse's History of Eighteenth Century Literature will be used as a text-book, supplemented by lectures, by use of Pancoast's Standard English Poems in the classroom, and by considerable library reading. The preparation of a thesis is required, with reports on collateral library work. Open to all students of the College who have had courses 1 and 2. Associate Professor Whitcomb and Assistant Professor Lynn.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

4.—AMERICAN LITERATURE. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. General history, with especial reference to the work of the chief American poets. Lecture and library course, with class study of representative selections. Professor Hopkins.

5.—American Literature. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. Study of later writers and of current literature, with especial reference to fiction. Lecture and conference course, with required readings and reports. Professor Hopkins.

6.—Chaucer. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. Lectures upon Middle English grammar and upon the life and times of Chaucer. Neither Old nor Middle English required for entrance. Careful reading of the Prologue, Knightes Tale, and the Nonne Preestes Tale. Rapid reading of a large part of the Canterbury Tales. Preparation of two theses. Professor Dunlap.

7.—English Literature of the Elizabethan Period, with special reference to Spenser. Two hours, 1st term, Tuesday and Thursday, at 9. Preparation of two theses. Professor Dunlap.

8.—Shakspere. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. Lectures upon the life and times of Shakspere. Study and interpretation of three plays, with special attention to literary form, plot construction, character study, and Elizabethan grammar. Two hours of library work required daily and preparation of two theses. Professor Dunlap.

9.—Shakspere. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. Lectures upon the life and times of Shakspere. Study and interpretation of three plays, with special attention to literary form, plot construction, character study, and Elizabethan grammar. Two hours of library work required daily and preparation of two theses. Professor Dunlap.

10.—English Literature of the Seventeenth Century, from Donne to Dryden. Two hours, 1st term, Tuesday and Thursday, at 10:15. Historical and critical study of the works of Herrick, Herbert, Milton, Cowley, Waller, Burton, Taylor, Clarendon, and Bunyan. Two hours daily of library work, with two theses during the term. Assistant Professor Raymond.

11.—English Literature of the Seventeenth Century, from Donne to Dryden. Two hours, 2d term, Tuesday and Thursday, at 2:30. Continuation of course 10. Assistant Professor Raymond.

12.—The Growth of Periodicals. Three hours, 2d term. Monday, Wednesday, and Friday, at 2:30. A study of the rise of popular opinion as a factor in literature, and the development of democratic ideals. Lectures on the history of literary traditions in the periodicals, and critical study of the individual authors with

reference to these traditions. Open to Juniors and Seniors who have had English literature 1, 2, and 3, and either 9, 10, 11, 12, 13, or 14 and 15. Preparation of two theses required. Assistant Professor Raymond.

13.—English Prose of the Eighteenth Century. Three hours, 2d term, Monday, Wednesday, and Friday, at 2:30. The authors studied will be Swift, Addison, Goldsmith, and Burke. Lectures, library work, and the preparation of theses. Associate Professor O'Leary.

14.—The English Essay. Two hours, 2d term, Tuesday and Thursday, at 2:30. A study, historical and critical, of the essay as a literary form, from Bacon to the present time. Lectures, theses, and library work. Associate Professor O'Leary.

15.—English Literature of the Nineteenth Century. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Prose, exclusive of the novel. Biographical and critical lectures. The essay. Criticism. History. The authors studied are Lamb, Hazlitt, De Quincey, Landor, Newman, Arnold, Carlyle, Macaulay, Ruskin, Pater, and Stevenson. Two hours of library work daily and preparation of two theses. Professor Dunlap.

16.—English Literature of the Nineteenth Century. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. Poetry. Biographical and critical lectures. The authors studied are Wordsworth, Coleridge, Southey, Byron, Arnold, Tennyson, and Browning. Two hours of library work daily and preparation of two theses. Professor Dunlap.

17.—Victorian Literature, exclusive of the novel and Tennyson and Browning. Two hours, 1st term, Tuesday and Thursday, at 11:15. Professor Dunlap.

18.—English Lyrical Poetry, from Wyatt and Surrey to Swinburne. Two or three hours, 1st term, Tuesday and Thursday, at 2:30 (and a third hour). Associate Professor Whitcomb.

19.—The English Novel. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. An historical and critical survey of the English novel, from Defoe to Meredith. Lectures on the growth and development of the novel. Study of selected typical novels, illustrative of important phases of fiction. Two hours of library work daily and preparation of two theses. Professor Dunlap.

20.—Browning. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. Lectures upon the life and literary period of Browning, with general view of more important works. Interpre-

tative study of shorter poems and two or three of the plays. Two theses required. Assistant Professor Lynn.

21.—TENNYSON. Two hours, 1st term, Tuesday and Thursday, at 2:30. General view of Tennyson and his relation to his period. Detailed study of representative works. One thesis required. Assistant Professor Lynn.

22.—SHELLEY AND KEATS. Two hours, 2d term, Tuesday and Thursday, at 11:15. Lectures and interpretation of selected poems of Shelley and Keats. Professor Dunlap.

23.—EPIC POETRY. Three hours, 1st term, Monday, Wednesday, and Friday, at 3:30. General view of the nature and history of epic poetry, with a comparative study of representative poems. Associate Professor Whitcomb.

24.—THE ENGLISH DRAMA, exclusive of Shakspere. Two or three hours, 1st term, Tuesday and Thursday, at 3:30 (and a third hour). General history of the English drama from the liturgical plays to the present time. More detailed study of a selected period. Associate Professor Whitcomb.

25.—ENGLISH LITERATURE AS INFLUENCED BY OTHER LITERATURES. Three hours, 2d term, Monday, Wednesday, and Friday, at 3:30. A general survey of the subject, including the history of translation into English, with more detailed study of some special period or type of literature. Associate Professor Whitcomb.

## ENGINEERING—CIVIL.

Professor MARVIN.
Assistant Professor HOAD.
Assistant Professor HUBBARD.
Assistant Professor H. A. RICE.

For equipment, see under School of Engineering.

Courses 8 to 15, inclusive, are open to Juniors and Seniors in the College. Courses 11 to 15, inclusive, are open to candidates for the master's degree, when accompanied by such extra work as may be required by the instructor. Courses 16 to 20, inclusive, are open only to candidates for the master's degree.

### COURSES FOR UNDERGRADUATES.

5.—SURVEYING. Five hours, 2d term, daily, at 11:15. Engineer's instruments, their construction and adjustment. Methods of making and platting land, topographic, mining and hydrographic surveys. Sources of error and the means of controlling the precision of field-work. Leveling and earthwork. Freshman and Sopho-

more optional. Open to students of the College who have had plane trigonometry. Assistant Professor Hubbard.

8.—MASONRY. Daily, 2d half of 1st term, at 8. Two and one-half credit hours. Character of materials composing masonry. Methods of cutting and dressing stone. Foundations: Cribwork, cofferdams, caissons, piles and pile-driving, concrete, pneumatic processes, etc. Masonry structures: Culverts, arches, piers, abutments, bridges, etc.; their form, construction, strength, and cost. Compound arches of concrete and metal. Recitations and lectures. Prerequisite, mechanics 1 and 2. Assistant Professor Hubbard.

9.—ROADS AND PAVEMENTS. Two hours, 2d term, Tuesday and Thursday, at 9. A study of the materials for and methods used in the construction and improvement of country roads and city pavements. Earthwork, drainage, the road foundation, the wearing surface, etc. Principles governing the location of roads. The economic importance of the "good-roads movement." Assistant Professor Hoad.

10.—RAILWAY LOCATION. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. The principles involved in an economic location and construction of railways. Analysis of traffic and operating expenses. The influence of proposed changes in location upon the amount of total revenue from traffic, the bonded debt and the corresponding fixed charges for interest, the operating expense, and the dividend-paying capacity of the road. Methods of conducting field-work for preliminary and location surveys. Prerequisite, course 11. Assistant Professor Hoad.

11.—RAILWAY SURVEYING. Five hours, 1st term, daily, at 10:15. A study of the methods of laying out and constructing railways. The setting out of simple and compound curves and calculation of excavation and embankment. Yards, turnouts, and switches. Easement curves of various types. Calculation of waterways, and methods of staking out foundations for culverts and bridges. This course must be preceded by a general course in surveying. Field-practice one-half day per week. Assistant Professor Hoad.

12.—SANITARY ENGINEERING. Daily, 1st half of 1st term, at 11:15. Two and one-half credit hours. The collection, removal and disposal of sewage by various methods. Water-carriage and pneumatic systems. Separate and combined systems. The construction of sewers, outfalls, manholes, and flushing appliances. Ventilation of sewers. Treatment of sewage. The collection and disposal of garbage and other refuse. Garbage destruction and utilization. Street-cleaning. Assistant Professor Hoad.

13.—Sanitary Engineering. Daily, 2d half of 2d term, at 11:15. Two and one-half credit hours. Water-supply. The requisites of a supply as to quality and quantity. The value of chemical and biological analyses and the interpretation of results. Relation of water-supply to the public health. Rainfall and the gathering and storage of surface-water. The collection of ground-water. The use of rivers and lakes as sources of supply. Distributing systems; conduits and pipe-lines, pumping machinery, the flow of water in open channels and closed conduits. The construction of dams and reservoirs. The purification of water. Methods of maintaining the efficiency of existing plants. Assistant Professor Hoad.

14.—Roofs and Bridges. 1st term, five hours, daily, 1:30 to 3:30. Analytical and graphical calculation of stresses in framed structures under various forms of loading. This course must be preceded by courses 1 and 2 in mechanics. Assistant Professor H. A. Rice.

15.—Bridge Designing. Five hours, 2d term, daily, 1:30 to 3:30. A study of bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course 14. Assistant Professor H. A. Rice.

COURSES FOR GRADUATES ONLY.

16.—Structural Designing. Five credit hours, 1st or 2d term, daily. An advanced course covering cantilever, swing and suspension bridges, skeleton frames for buildings, train-shed roofs, standpipes, and elevated tanks. This course is designed to follow course 15. Lectures, recitations, and detail designing in the drawing-room. Professor Marvin.

17.—Engineering Materials. Five hours, 1st term, daily. An advanced course, which must be preceded by course 2 in mechanics. It covers the methods of manufacture of structural materials and the different means and machines used in testing their qualities. The materials considered are cast iron, wrought iron, steel, brick, stone, cements, concrete, and timber. Opportunity will be given for specialization along some particular line, if desired, and considerable experimental work may be done in the testing laboratory. Recitations, lectures, library and laboratory work. Professor Marvin.

18.—Sanitary Engineering. Five hours, 2d term, daily. An advanced course, to follow courses 12 and 13. The public health. Contagious diseases and methods for destroying them. Bacteriological methods as applied to sanitary work. Influence of sanitary works on public health. Advanced work on sewerage and water-

supply. Lectures, recitations, and reading. Assistant Professor Hoad.

19.—GEODESY. Five hours, 2d term, daily. Method of making geodetic surveys. Station signals and their location. The measurement of angles and laying out of base lines. Determination of latitude, longitude, time, and azimuth. Instrumental constants and sources of error. Leveling by vertical angles. Precise leveling. Figure of the earth. A knowledge of surveying and calculus is necessary for this course. Professor Marvin.

20.—RESEARCH COURSE. A course of investigation of some matter directly related to civil engineering. This course should run through the year, making a ten hours' credit. Arrangements for the course should be made with Professor Marvin.

## ENGINEERING—MECHANICS.

Assistant Professor H. A. RICE.
Assistant Professor HOOD.
Assistant Professor HUBBARD.
Assistant Professor CORP.

For equipment, see under School of Engineering.

Courses 1 to 5 are open to Juniors and Seniors. When accompanied by such extra work as may be required by the instructor, they are also open to candidates for the master's degree.

1.—MECHANICS. Five hours, 1st term, daily, at 8 or 9. A study of the laws of statics and dynamics. Action of forces upon bodies and the resulting motions. Prerequisite, calculus. Assistant Professor H. A. Rice.

2.—STRENGTH OF MATERIALS. Four hours, 2d term, daily, at 8 or 10:15. The theory of resistance to stress and applications to engineering construction. To be preceded by course 1. Assistant Professor H. A. Rice.

3.—TESTING OF MATERIALS. Four hours, 2d term, Monday, Tuesday, Thursday, and Friday or Saturday. A laboratory course to accompany course 2. The testing of iron, steel, wood and other materials of construction for resistance to tension, compression, torsion, bending, and shearing. Experimental determination of the limits of safe loading. The testing of paving brick. Assistant Professor Hood and Assistant Professor Corp.

4.—HYDRAULICS. Daily, 1st half of 1st term, at 10:15. Two and one-half credit hours. A study of the laws governing the pressure and flow of liquids and gases and the force of and resistance to their motion. Assistant Professor Hubbard.

5.—Hydraulic Laboratory. Two hours, 1st term, Tuesday, Thursday, or Friday. A course to accompany course 4 and the course in hydraulic machinery. Experimental work with the flow of water over weirs, through orifices and pipes, and in testing hydraulic machinery. Assistant Professor Hood.

## ENGINEERING—Electrical.

Professor Blake.
Assistant Professor M. E. Rice.

For equipment, see under School of Engineering.

Courses 1, 2 and 3 are open to Juniors and Seniors who have had the necessary preparation.

### COURSES FOR UNDERGRADUATES ONLY.

1.—Theory of Electricity and Magnetism. Five hours, 1st term, daily, at 10:15. A mathematical treatment of the general principles involved in the direct-current devices and introductory to their application in direct-current machinery. Junior. Professor Blake.

2.—Theory of Alternating Currents. Five hours, 2d term, daily, at 9. A mathematical treatment of the general principles involved in alternate-current phenomena and introductory to their application in polyphasal machinery. Junior. Professor Blake.

14.—Dynamo Machinery. Five hours, 1st term, daily, at 10:15. A briefer course than 3 and 4 (School of Engineering), covering both direct- and alternating-current machines. Must be preceded by physics 7 and 8 and calculus. Junior. Assistant Professor Rice.

## ENGINEERING—Mechanical.

Associate Professor Walker.
Assistant Professor Corp.

For equipment, see under School of Engineering.

Courses 10 and 11 are open to Juniors and Seniors in the College. Courses 2 to 13, inclusive, are open to candidates for the master's degree when accompanied by such extra work as may be required by the instructor. Courses 2, 7, 9, 10 and 11 are recommended as giving the mathematical treatment of the various branches of general mechanical engineering. Courses 18 to 20 are open only to graduates who have taken the equivalent of the regular undergraduate courses in either mechanical or electrical engineering.

COURSES FOR ADVANCED UNDERGRADUATES OR GRADUATES.

2.—MECHANICS OF MACHINERY. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. (*a*) First six weeks, a study of forces involved in the operation of machine tools, die-stamping machinery, etc. Lectures and recitations. (*b*) Mechanics of the steam-engine; engine mechanism; valve motion; valve designing; analysis of forces due to steam pressure; crank-effort diagrams and fly-wheel design. Text, Heck's Steam Engine. Must be preceded by mechanics 1. Associate Professor Walker.

3.—KINEMATICS. Three hours, 2d term, Tuesday and Thursday, 1:30 to 4:30. A study of the motion of machine parts and of methods of transmitting motion by gears, belts, cams, etc. A drawing-room course. Text, Barr's Kinematics of Machinery. Assistant Professor Corp.

4.—MACHINE DESIGN. Three hours, 1st term, 2:30 to 5:30, Monday and Wednesday. Designing and drawing of simple machine parts, followed by the complete design of some metal-working machine. Lectures and drawing exercises. Text, Kent's Mechanical Engineer's Handbook. Must be preceded by mechanics 1 and 2. Associate Professor Walker and Assistant Professor Corp.

5.—MACHINE DESIGN. Four hours, 2d term, Tuesday and Thursday, 1:30 to 5:30. Options in work allowed, as follows: (1) Same as course 4. (2) Continuation of course 4 with more complex machinery. (3) Engine designing, either steam or gas. For third option the course must be preceded by 2, 4, and 11, and preceded or accompanied by 9 or 12. Associate Professor Walker.

7.—ENGINES AND BOILERS. Five hours, 2d term, at 11:15. A classroom course designed for those who do not plan to go further into the subject. It includes an elementary course in thermodynamics and a study of modern types of steam power generators. Text, Kinnealy's Engines and Boilers. Must be preceded by physics 1, 2, 3, 4, or physics 7, and by mathematics 5. Assistant Professor Corp.

8.—GENERAL MACHINE DESIGN. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. Text-book work in methods of designing and proportioning machine parts for strength and durability; designing of power-transmission systems; calculations for strength of cylinders and efficiency of riveted joints. Text, Jones's Machine Design. Must be preceded by mechanics 1. Assistant Professor Corp.

9.—THE GAS-ENGINE. Two hours, 2d term, Tuesday and Thursday, at 9. Power, efficiency and economy of the gas-engine;

study of the forces produced by the gas pressure and inertia; structural design. Text, Lucke's Gas Engine Design. Must be preceded by mechanics 1 and 2, and by either 7 or 11. Associate Professor Walker.

10.—HYDRAULIC MACHINERY. Four hours, 1st term, at 10:15. A study of types of pumping machinery, with special reference to city water-supply, sewerage, and irrigation plants. The question of first cost and maintenance of plant and economy in operation are fully discussed. Also a study of water-power development and methods of designing turbine water-wheels. Lectures, assigned reading, and reports. Must be preceded by mechanics 4. Associate Professor Walker.

11.—THERMODYNAMICS. Four hours, 1st term, at 11:15. A thorough study of the laws of gases and vapors, and of the methods of converting heat into mechanical energy. The temperature-entropy method of analysis is followed, and applications made to ideal steam- and gas-engines. Texts, Reeves's Thermodynamics and Spangler's Notes on Thermodynamics. Must be preceded by physics 1, 2, 3, 4, or physics 7, by mathematics 5 and 7, and mechanics 1. Associate Professor Walker.

12.—ADVANCED STEAM ENGINEERING. Three hours, 2d term, Tuesday, Thursday, and Friday, at 8. Study of heat losses in the steam-engine, with methods of reducing same; compounding; superheating; jacketing; designing of reciprocating engines; principles of operation and design of air-compressors and refrigerating machinery; the steam jet; form of nozzle for adiabatic jet; and design of the steam-turbine. Recitations and lectures. Texts, Heck's Steam Engine, Reeves's Thermodynamics, and Kent's Mechanical Engineer's Handbook. Must be preceded by 11. Associate Professor Walker.

13.—ENGINEERING PRACTICE. Four hours, 1st term ($a$), at 11:15. Power-house equipment and design. Power development by water, steam and gas considered in relation to cost and adaptability. Application of power to machinery by mechanical and by electrical methods of transmission compared with reference to cost and economy. Influence of modern methods on cost of manufacturing. Lectures. Must be preceded by either 7 or 11. Associate Professor Walker.

COURSES OPEN TO GRADUATES IN MECHANICAL AND ELECTRICAL ENGINEERING.

18.—ADVANCED LABORATORY. Two and one-half or five hours, both terms, as assigned. Research work on special subjects. Associate Professor Walker.

19.—Advanced Designing. Two to four hours, both terms. Preparation of complete plans for some special machine or plant for power development or manufacturing. Associate Professor Walker.

20.—Library Work. Two hours, both terms. Assigned reading and reports; indexing engineering literature; preparation of bibliography. Associate Professor Walker.

## ENTOMOLOGY.

Associate Professor Hunter.

### EQUIPMENT.

The two laboratories are arranged so that one is devoted to the introductory courses and the other to the research courses. The former is equipped with both compound and dissecting microscopes, and such accessory apparatus as is required by the students. The latter contains, in addition to the equipment of microscopes, special apparatus, such as meets the individual requirements of students doing advanced work. In addition to the collection of books here shelved, there are important foreign and English periodicals, as well as monographs and other separata. The extensive collections, both biologic and systematic, offer unusual facilities for comprehensive instruction in the various groups. A more extended notice of these collections will be found under the head of "Museums." (See index.) A large series of cabinets has been especially arranged to aid in teaching. These are supplemented by models illustrating developmental processes. The material for study and apparatus at hand afford exceptional opportunities for research work.

### ADVICE AS TO CHOICE OF COURSES.

The following courses are designed to meet the needs of two classes of students, viz.:

(1) Those who in general education desire some knowledge of the subject-matter and general principles of animal biology, as illustrated by this division of the animal kingdom. For this class, courses 1 to 4, inclusive, are adapted.

(2) Those preparing to become teachers and investigators engaged in research work. After completing the fundamental courses, 1 to 4, inclusive, the aims of each student will largely determine the selection of advanced courses. The requirements for those expecting to teach entomology in secondary schools are courses 1 to 4, inclusive, and course 7.

COURSES FOR UNDERGRADUATES ONLY.

1.—Introductory Entomology. Three hours, 1st term, Monday, Wednesday, and Friday, 1:30 to 3:30. This course includes a general survey of the morphology, distribution, classification and behavior of the orders of insects. The work in the laboratory consists (1) of an anatomical study of one or more types, followed by a comparison of each type studied with closely allied forms. (2) Exercises in classification of orders and families. A series of lectures accompany the laboratory work. Open to all students of the College. Associate Professor Hunter.

2.—Introductory Entomology. A continuation of course 1. 2d term, Monday, Wednesday, and Friday, 1:30 to 3:30. Open to all students of the College. Associate Professor Hunter.

3.—Systematic Entomology I. Two hours, 1st term, Tuesday and Thursday, 1:30 to 3:30. This course gives special prominence to the systematic position of the orders studied. The laboratory work consists of (*a*) determination of species; (*b*) careful morphological study of organs with special reference to their evolution; (*c*) when possible, an extended study of the species of one or more families. In addition to the text, monographs and current literature of special groups will be used. Open to all students of the College. Associate Professor Hunter.

4.—Systematic Entomology II. Two hours, 2d term, Tuesday and Thursday, 1:30 to 3:30. A continuation of the work of course 3. Open to all students of the College. Associate Professor Hunter.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

5.—Ecology. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. Lectures, readings and field-work on the behavior of insects and their relation to their environments. Associate Professor Hunter.

6.—Economic Entomology. Two hours, 1st term, Tuesday and Thursday, at 10:15. Lectures, readings and observations in field on forms of economic value: the beneficial—their habits, life-histories; the injurious—their habits, life-histories, and modes of dealing with such forms. The economic status of the class Insecta. Associate Professor Hunter.

7.—Teachers' Course. Three hours, 2d term, 3:30 to 5:30. Laboratory course, adapted to those who expect to teach. Lectures upon life-histories, insect relationships, choice of materials, and modes of presentation. Field-work on habits of social insects. Associate Professor Hunter.

8.—SEMINARY. One hour, by appointment, throughout the year. Designed for discussion of special subjects and reports upon the more notable current advances in this branch of science.

COURSES FOR GRADUATES ONLY.

9.—ORIGINAL INVESTIGATION. Throughout the year, by appointment. Research work in parthenogenesis. Associate Professor Hunter.

10.—ORIGINAL INVESTIGATION. By appointment, throughout the year, including the summer months. Taxonomy, Insecta. Critical study of Kansas fauna. This course has for its object a survey of the species found in the state. Associate Professor Hunter.

11.—MORPHOLOGICAL DEVELOPMENT. Problems assigned with reference to the attainments of individual students. Throughout the year, by appointment. Associate Professor Hunter.

## ORGANIC EVOLUTION.

**Professor Snow.**

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

1.—THE PRINCIPLES OF EVOLUTION. Lectures and readings. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. This course includes a history of the doctrine of evolution and a consideration of the facts which support the doctrine. These facts include the relation of the extinct forms of past ages to the present, the series of embryological changes in the higher animals, the fertilization of flowers by insects, and the geographical distribution of plants and animals. The obsolete theory of spontaneous generation receives attention. Professor Snow.

2.—PRINCIPLES OF EVOLUTION. Four hours, 1st half of 2d term, Tuesday, Wednesday, Thursday, and Friday, at 10:15. This course is a continuation of course 1, and includes a discussion of the various theories which have been proposed to account for evolution; the comparative influence of environment and heredity, the origin of the races of mankind, the origin of human intellect and conscience, and the relation of the law of evolution to the other great laws of the natural and spiritual world. These two courses are illustrated by occasional stereopticon exhibits. Professor Snow.

## FRENCH.

(See Romance Languages and Literatures.)

## GEOLOGY AND MINERALOGY.

Professor HAWORTH.
Assistant Professor KAY.

### EQUIPMENT.

The library is of first importance for equipment in geology, and apparatus and museums next. The library includes practically all the reports of public surveys made in America, both national and state, and all the leading text-books and special treatises by the leading authorities of the world. Of particular importance is the large number of topographic sheets and folios of the final mapping of the United States Geological Survey. The geological and mineralogical museums are described elsewhere in this catalogue, to which the reader is referred. Large numbers of maps and papier-mache models of geological and topographic land forms, especially chosen from those now on the market, add greatly to the equipment for good, effective work.

### ADVICE AS TO CHOICE OF COURSES.

The following courses in geology are designed to meet the requirements of two classes of students: those wishing to become working geologists, and those wishing only a general outline of the subject as a part of a liberal education. In the former case the student is advised to take all the courses offered, as nearly as possible in the order given, or possibly 4 might be brought in at any time after 1. Should the student desire to give only a limited time to the study, he should begin with 1, after which he may take 2, 3, or 4, in any order, with 4 most desirable for those who take only a single year's course.

Course 1 is open to all students of the College excepting Freshmen, and is required of mining engineering Sophomores and civil engineering Juniors.

Courses 1 to 8, inclusive, are open to Juniors and Seniors in the College. Courses 2 to 8, inclusive, are open to graduate students who have not already taken them.

### *Geology.*

### COURSES FOR UNDERGRADUATES.

1.—ELEMENTS OF PHYSICAL GEOLOGY. Five hours each term, daily, at 11:15. A study of the elementary principles of general geology, including physical conditions throughout geologic time and the formation of continents; nature and origin of the different kinds of rocks and the rock-forming materials; the destructive

process of erosion or denudation, and the economic products obtained by the various mining operations. Professor Haworth.

2.—AREAL GEOLOGY I. Two hours, Tuesday and Thursday, at 10:15. This course is an extension of course 1, with special reference to the stratigraphy of land areas, continental development, the history of animal and plant life upon the earth, and the uses of fossil forms in the identification and correlation of geologic horizons. A special study will also be made of field methods in geology in organizing and conducting geological investigations and geological surveys. It should be taken by all students who contemplate teaching geology or making geological investigations. Must be preceded by course 1. Lectures and library work. Professor Haworth.

3.—AREAL GEOLOGY II. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. A continuation of course 2. Professor Haworth.

4.—ECONOMIC GEOLOGY I. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. A general study of the metallic and non-metallic products of the mine, quarry, and well, considered from a scientific and a practical standpoint, including the nature, origin, amount and geographic and geologic distribution of the same. Must be preceded by elementary chemistry and geology 1 or mineralogy 1. Lectures and library work. Professor Haworth.

5.—ECONOMIC GEOLOGY II. Two hours, 2d term, Tuesday and Thursday, at 10:15. A continuation of course 4. Professor Haworth.

6.—PHYSIOGRAPHY. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. A study of the general principles of physiography, with detailed studies of specific areas in latter part of course, including earth movements, general elevation and depression of land areas, rock disintegration, origin and nature of drainage systems and the life-history of rivers, and origin of surface features and causes which have produced them. Must be preceded by geology 1. Lectures and library work. Professor Haworth.

7.—DYNAMIC GEOLOGY I. Two hours, 1st term, Tuesday and Thursday, by appointment. A brief course on the elementary principles of dynamic geology, to follow course 1 or course 2. It will include a study of continental development, mountain areas, and mountain structure and mountain origin, and kindred subjects. Lectures, library and laboratory work. Professor Haworth.

8.—DYNAMIC GEOLOGY II. Three hours, 2d term, Tuesday and Thursday. A continuation of course 7. Professor Haworth.

ADVANCED COURSES FOR GRADUATES.

9.—Dynamic Geology. Graduate students in geology will be provided with opportunity to pursue the study of dynamic geology to any extent desirable, dependent upon the previous training of the student and the object in view. The work may be continued through one or more years, and may be made a major or minor subject for the degree of master of arts or doctor of philosophy By appointment. Professor Haworth.

10.—Physiography. Opportunity is offered graduate students to pursue the study of physiography for one or more years, dependent upon the previous training and end in view. It may be elected either as a major or minor for the degree of master of arts or doctor of philosophy. By appointment. Professor Haworth.

11.—Economic Geology. Opportunity is offered graduate students to pursue the study of the subject throughout the year for one or more years, and to choose it as a major or minor subject for the degree of master of arts or doctor of philosophy. By appointment. Professor Haworth. Students electing either of the above courses as a major for the degree of doctor of philosophy must devote at least half their time to it for three years, and must present a dissertation embodying the results of original work done in connection therewith, in accordance with the general conditions governing the granting of this degree by this University and with the requirements of the department of geology.

12.—Summer Field-work. Opportunity is offered advanced students in geology, either graduate or undergraduate, to do field-work in geology in connection with the University Geological Survey of Kansas, under the guidance of the department of geology, for which credit will be given the same as for work done in the classroom and laboratory. By appointment. Professor Haworth.

*Mineralogy.*

1.—Elementary Mineralogy I. Five hours, 2d term, daily, 3:30 to 5:30. A brief course in crystallography, blowpipe analysis, and systematic mineralogy, consisting of lectures and laboratory work as follows: Crystallography.—A study of the properties of crystals and the crystal systems, with laboratory exercises, using natural crystals and crystal models. Considerable work is required in drawing crystal forms and measuring crystal angles. Moses and Parsons' Text-book on Mineralogy will be used. Chemical Mineralogy.—In blowpipe analysis sufficient practice is required to familiarize the student with all the ordinary blowpipe tests for mineral identifications. Physical Mineralogy.—

The student is required to become thoroughly familiar with the methods of identifying all the more common minerals by their physical characters, such as crystalline form, cleavage, gravity, luster, streak, hardness, and color. The uses, localities and productions of the minerals of economic importance are discussed. Required of mining and chemical engineers, Sophomores. Open to Juniors and Seniors who have had qualitative analysis. It may also be taken for graduate credit, provided some extra time is given to it. Assistant Professor Kay.

2.—SYSTEMATIC MINERALOGY. Five hours, 1st term, daily, by appointment. This course is a continuation of mineralogy I, including an extended study of mathematical and physical crystallography, including optical properties, crystal measurements with reflection goniometers, crystal projection, and study of the most approved classification of minerals. Open to all students who have had mineralogy I. Assistant Professor Kay.

3.—PETROGRAPHY. Three hours, 1st term, Monday, Wednesday, and Friday, by appointment. This course includes a study of the mineralogical and chemical composition of rocks, their origin, structural features, and classification. The laboratory equipment for this course consists of carefully selected collections representing all the principal rock-making minerals, rock families, and rock types, together with several hundred thin sections for study with the petrographical microscope. The most recent field classification of rocks, Rosenbuch's classification, and the quantitative classification are discussed. Open to all students who have had mineralogy 1. Assistant Professor Kay.

4.—PETROGRAPHY. Three hours, 2d term, by appointment. A continuation of course 3. Assistant Professor Kay.

5.—VOLCANISM AND METAMORPHISM I. Three hours, 2d term, by appointment. (1) Volcanoes and volcanic phenomena, with a discussion of the theories concerning them. (2) Principles of metamorphism and metamorphic rocks. The forces, agents and general processes of metamorphism, the classification and description of the metamorphic sedimentary and the metamorphoric igneous rocks. Van Hise's Treatise on Metamorphism will be used as a text. Open to all students who have had geology I and mineralogy I. Assistant Professor Kay.

## GERMANIC LANGUAGES AND LITERATURES.

Professor CARRUTH.
Associate Professor ENGEL.
Assistant Professor CORBIN.
Assistant Professor KRUSE.
Mr. BAHNER.
Mr. BENDER, Fellow.

### EQUIPMENT.

The German department has an excellent stereopticon and 600 stereopticon slides, illustrating scenery, costumes, and biography; a small number of excellent photographs and prints in frames; a complete set of twenty German wall-maps, showing the various separate states, and a few busts. There are 2400 volumes in the library of the German department, and five philological and seven literary journals are received.

There has just been purchased a valuable collection of 3000 unbound dissertations and school programs, covering all fields of Germanistic scholarship. With the present library and this acquisition of special studies, the German department will be prepared to encourage graduate study at the University of Kansas in Germanic languages.

The Deutscher Verein owns a piano, which is used for accompanying the German songs of the verein.

### ADVICE AS TO CHOICE OF COURSES.

Students who plan to become teachers of German in high schools and academies should consult with the head of the department before the close of the Sophomore year. An outlined course for the four College years will be found on the department bulletin board, and is recommended to the careful attention of those concerned.

Courses 1 to 9, inclusive, are open to all students of the College. Courses 10 to 19 and 21 and 22 are open to both undergraduates in the College and to graduate students. Course 20 is open to Juniors and Seniors only. The full amount of Latin, 1, 2, 3, for entrance is required as preparation for German 1 and 2.

### COURSES FOR UNDERGRADUATES ONLY.

1.—OUTLINE OF GRAMMAR. Five hours, 1st term, at 8, 9, 10:15, 11:15, and 1:30; 2d term, at 1:30. The first eighteen lessons of Otis's Grammar, with composition exercises; Carruth's Reader, about fifty pages. Professor Carruth, Associate Professor Engel, Assistant Professor Corbin, Assistant Professor Kruse, and Mr. Bahner. The eight o'clock division is for students who intend to make German a major study. In this more insistence will be laid

upon speaking German. The nine o'clock division is for students who expect to take only a minimum of German. The other divisions will be determined by convenience of hours alone. Practice classes in beginning German will be conducted at eight o'clock and nine o'clock. To these a limited number of students who lack the requirement of entrance Latin will be admitted.

2.—CARRUTH'S READER, completed, ZSCHOKKE, KLEIST, HEYSE (100 pp.), and SCHILLER'S WILHELM TELL (complete). Also special exercises in word order and auxiliary verbs, and sight-reading. Five hours, 1st term, at 2:30; 2d term, at 8, 9, 11:15, and 1:30. Associate Professor Engel, Assistant Professor Corbin, Assistant Professor Kruse, and Mr. Bahner.

3.—REVIEW OF GRAMMAR. Freytag's Die Journalisten. Geschichte des 30-jährigen Krieges. Sight-reading. Five hours, 1st term, at 8, 9, 10:15, 11:15, 1:30, and 3:30; 2d term, at 9. Associate Professor Engel, Assistant Professor Corbin, Assistant Professor Kruse, and Mr. Bahner.

4.—SCHILLER'S WALLENSTEIN (complete). Outline of German literature in dictations and lectures. Five hours, 2d term, at 8, 9, 10:15, 11:15, and 3:30; 1st term, at 1:30. Associate Professor Engel, Assistant Professor Corbin, Assistant Professor Kruse, and Mr. Bahner.

5.—GERMAN COMPOSITION. Three hours, 1st term, at 10:15. Translation of connected English, Poll's or v. Jagemann's German Prose Composition, v. Jagemann's German Syntax, Fossler's Practical German Conversation. Associate Professor Engel and Assistant Professor Corbin.

6.—GOETHE'S FAUST (parts I and II). Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. Professor Carruth and Assistant Professor Corbin.

7.—GOETHE'S IPHIGENIE. Two hours, 1st term, Tuesday and Thursday, at 11:15. Professor Carruth and Assistant Professor Corbin.

8.—LESSING'S NATHAN DER WEISE. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Professor Carruth and Associate Professor Engel.

9.—SCHILLER'S DIE BRAUT VON MESSINA. Two hours, 1st term, Tuesday and Thursday, at 10:15. Professor Carruth and Associate Professor Engel.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

10.—GERMAN LITERATURE. Five hours, 1st term, at 10:15. An outline history. Lectures, the class following Scherer, Francke, or Gostwick and Harrison. Essays and criticisms by members of the class. Open only to students who have had courses 3 and 4. Professor Carruth.

11.—GERMAN LITERATURE OF THE EIGHTEENTH CENTURY. Five hours, 2nd term, at 10:15. Klopstock, Wieland, Lessing, Herder, Goethe, and Schiller. Reading the chief works, with reviews. Professor Carruth.

12.—GERMAN HISTORICAL NOVELS. Five hours, 1st term, at 10:15. Hauff, Scheffel, etc. Careful reading in class of one work by each author; others outside. Lectures on the history of the novel and on methods and schools in fiction. Theses on separate authors and on the whole course, by members of the class. Professor Carruth. (Not given in 1906–'07.)

13.—GERMAN HISTORICAL NOVELS (continued). Five hours, 2d term, at 10:15. Professor Carruth. (Not given in 1906–'07.)

COURSES 14, 15, 16, 17, 18 and 19 ARE PRIMARILY FOR GRADUATES.

14.—HISTORY OF THE GERMAN LANGUAGE. Two hours, 1st term, Tuesday and Thursday, at 1:30. Introduction to philological study. Lectures and library work. Professor Carruth.

15.—GOTHIC. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. Phonetics, grammar, and translations. Professor Carruth.

16.—OLD NORSE. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. Noreen's Altnordische Grammatik; Brenner's Handbuch; Vigfusson and Powell's Reader. Professor Carruth.

17.—MIDDLE HIGH GERMAN. Five hours, 2d term, by appointment. Paul's Mittelhochdeutsche Grammatik. Nibelungenlied. Hartmann, Der arme Heinrich. Selections from Walther von der Vogelweide. Lectures. Associate Professor Engel.

18.—THE ROMANTIC LYRIC IN GERMANY. Two hours, 1st term, at 4:30. Assistant Professor Corbin.

19.—LUTHER AND THE SIXTEENTH CENTURY. Two hours, 2d term, Tuesday and Thursday, by appointment. Reading and grammatical study of the German literature of the reformation, preceded by an outline of historical German grammar. Professor Carruth.

20.—Teachers' Course. Five hours, 2d term. Advanced grammar, with theory and practice of language teaching. Intended especially for those who desire to fit themselves for teaching German in high schools. Open only to the best students of the department. Professor Carruth and Assistant Professor Corbin.

21.—The Lyrics and Ballads of Goethe and Schiller. Three hours, 2d term, Monday, Wednesday, and Friday, at 4:30. Assistant Professor Corbin.

22.—Germanic Mythology. Two hours, 2d term, Tuesday and Thursday, at 1:30. Professor Carruth.

## GREEK.

Professor Wilcox,
Associate Professor Sterling.

### EQUIPMENT.

Nineteen casts of sculpture, four models, a relief-map, numerous wall maps, 800 photographs, 500 plates (many colored), 49 illustrated folios, 2300 volumes in library, 14 current periodicals, 1600 stereopticon slides.

### ADVICE AS TO CHOICE OF COURSES.

Those who aim to become teachers of Greek or Latin or any other language, or who take Greek for general culture or discipline, should take the courses in order from 1 to 18, and 27 and 28, or as many of them as they have not taken before entering the University, or have time to take. Students preparing for the ministry will find it best to follow the same plan, and take the course in New Testament Greek in addition, or in place of some course in classical Greek they might otherwise take. Students who aim simply at reading the New Testament in the original for their own pleasure or profit can accomplish that by taking courses 21 and 22. Students of science and English may get in course 19 a good working knowledge of the scientific and other English words that are derived from Greek; this course may also serve as an introduction to classical Greek, being followed by courses 20 and 4. Students of all literatures who can give no more time to Greek may get a very good idea of the content of Greek literature, and especially a valuable knowledge of mythology, from courses 23 and 24, or a partial knowledge from either of those courses. Those who desire an introduction to the architecture of all periods may get it in course 25; to the sculpture and painting of all periods, in course 26. A very rapid survey of the great arts of the Greek and Roman periods is made in course 27; of mediæval and modern times, in course 28.

Greek students should take also the courses in Greek and Roman history, in the history of philosophy, and as many literary courses as possible.

COURSES FOR UNDERGRADUATES ONLY.

1.—ELEMENTARY GREEK. Five hours, 1st term, daily, at 9. Gleason's Greek Primer, or White's First Greek Book. Associate Professor Sterling.

2.—XENOPHON'S ANABASIS, or equivalent prose. Five hours, 2d term, daily, at 9. Associate Professor Sterling.

3.—HOMER'S ILIAD. Three hours, first term, Monday, Wednesday, and Friday, at 9. Professor Wilcox.

4.—THUCYDIDES, selections. Two hours, 1st term, Tuesday and Thursday, at 9. Professor Wilcox.

5.—HOMER'S ODYSSEY. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. Professor Wilcox.

6.—HERODOTUS (selections). Two hours, 2d term, Tuesday and Thursday, at 9. Professor Wilcox.

7.—PLATO'S APOLOGY AND CRITO. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Associate Professor Sterling.

8.—SOPHOCLES. Two hours, 1st term, Tuesday and Thursday, at 11:15. Associate Professor Sterling.

9.—EURIPIDES AND ÆSCHYLUS. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. Associate Professor Sterling.

10.—DEMOSTHENES. Philippics. Two hours, 2d term, Tuesday and Thursday, at 11:15. Associate Professor Sterling.

19.—THE GREEK IN ENGLISH. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. The elements of Greek with especial reference to English. The course may serve as an introduction to classical Greek. Associate Professor Sterling.

20.—ATTIC GREEK. Two hours, 2d term, Tuesday and Thursday, at 10:15. Stories, legends, and selections from prose authors. Continuation of 19. Associate Professor Sterling.

21.—ELEMENTARY NEW TESTAMENT GREEK. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. Associate Professor Sterling.

22.—NEW TESTAMENT. Two hours, 1st term, Tuesday and Thursday, at 10:15. Reading of select passages in Westcott and Hort's text. Associate Professor Sterling.

27.—GREEK ART. One hour, 1st term, Tuesday, at 4:30. The

essentials and fundamental principles of Greek architecture, sculpture, and painting. Illustrated lecture and two hours' outside reading. Professor Wilcox.

28.—GREEK ART IN RELATION TO LATER AND MODERN ART. One hour, 2d term, Tuesday, at 4:30. The essential and fundamental principles of Roman mediæval and modern art, with especial reference to survivals and revivals of ancient art elements. Illustrated lecture and two hours' outside reading. Professor Wilcox.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

11.—THE CLOUDS OF ARISTOPHANES AND MEMORABILIA OF XENOPHON. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15, or by appointment. Professor Wilcox. (Not given in 1906–'07.)

12.—THE GORGIAS OF PLATO. Two hours, 1st term, Tuesday and Thursday, at 10:15, or by appointment. Professor Wilcox. (Not given in 1906–'07.)

13.—GREEK HISTORY AND POLITICS. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15, or by appointment. Representative selections of Greek life and thought in Wilamowitz-Moellendorf's Reader. (Not given in 1906–'07.) Professor Wilcox.

14.—GREEK PHILOSOPHY, COSMOGONY, ETC. Two hours, 2d term, Tuesday and Thursday, at 10:15, or by appointment. Selections in Wilamowitz-Moellendorf's Reader on philosophy, cosmogony, astronomy, mathematics, medicine, esthetics, and grammar. Professor Wilcox. (Not given in 1906–'07.)

15.—GREEK LITERARY CRITICISM. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15, or by appointment. The Frogs of Aristophanes and Chœphoroi of Æschylus. Aristotle's Poetics. Professor Wilcox.

16.—LYRIC POETRY (elegiac and iambic). Two hours, 1st term, Tuesday and Thursday, at 10:15, or by appointment. Professor Wilcox.

17.—GREEK LITERARY CRITICISM. Two hours, 2d term, Tuesday and Thursday, at 10:15, or by appointment. The Electras of Sophocles and Euripides and Aristotle's Poetics. Professor Wilcox.

18.—LYRIC POETRY (melic). Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15, or by appointment. Alcæus, Sappho, Simonides, Pindar, and Bacchylides. Professor Wilcox.

23.—GREEK POETRY IN TRANSLATIONS. Three hours, 1st term,

Monday, Wednesday, and Friday, at 11:15. Lectures, recitations, private reading, writing of themes. Professor Wilcox.

24.—Greek Drama in Translations. Two hours, 2d term, Tuesday and Thursday, at 11:15. Lectures, recitations, private reading, writing of themes. Professor Wilcox.

25.—Greek Architecture. Two hours, 1st term, at 11:15. Includes the fundamental principles of all styles, with especial reference to the survivals and revivals of Greek elements. Lectures, private reading, recitations. Professor Wilcox.

26.—Greek Sculpture and Painting. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. Includes for purposes of comparison and appreciation a summary view of the sculpture and painting of later and modern times. Professor Wilcox.

## HARMONY.

(See Music.)

## AMERICAN HISTORY AND POLITICAL SCIENCE.

Professor Hodder.
Mr. Mitchell, Assistant.

### EQUIPMENT.

The University library is supplied with all the important secondary authorities in American history, and with a considerable amount of source material. Where original editions of early books have been unobtainable, such reprints as Thwaites's "Jesuit Relations" and the Goldsmid and Macklehose editions of "Hakluyt" have been substituted. The sets of Kansas state documents, of congressional debates and of American state papers are complete. The set of congressional documents begins with the second session of the twenty-eighth Congress. For the colonial period, the library has the colonial series of calendars of the British state papers, the New York colonial documents, the New Jersey archives, and other similar sets; and for the period of discovery, the works of Harrisse and the atlases of Nordenskiold and Kretchmer. Particular attention has been given to the collection of books relating to Kansas and the trans-Missouri region, and a collection of American travels has been begun. Free access to all but the rarest books is given to students in the history and sociology reading-room. The supply of maps and atlases for class and reference purposes is adequate.

ADVICE AS TO CHOICE OF COURSES.

The department provides two years of continuous daily work, covering colonial history and constitutional and international law during the first year, and the political and constitutional history of the United States during the second. A seminary for original research is provided for students who have completed the two years' course. Students desiring to give less than two years to American history may take any of the courses desired, subject only to the limitation that the courses in "Presidential Administrations" are open only to Seniors and Graduates, unless preceded by constitutional law. No short general course in American history is offered, upon the theory that it is better to cover a part of the field thoroughly than the whole superficially. Students desiring a recommendation to teach civil government must take course 3, and students desiring a recommendation to teach American history must take two of the historical courses.

UNDERGRADUATE COURSE.

1.—GOVERNMENT OF THE UNITED STATES. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. A study of the American federal state, including, first, a statement of some of the more important principles of political science with practical applications; second, an historical survey of the origin and development of American political institutions; third, a study of national, state and local governments as they now exist, and fourth, a consideration of the policies of the state in regard to great public questions that now confront it. Recitations and assigned reading. Open to Sophomores and Juniors. Mr. Mitchell.

ADVANCED UNDERGRADUATE AND GRADUATE COURSES.

2.—AMERICAN COLONIAL HISTORY. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. This course covers the discovery of America, the period of Spanish and French exploration, and the origin and development of the English colonies. Professor Hodder.

3.—AMERICAN CONSTITUTIONAL LAW. Two hours, 1st term, Tuesday and Thursday, at 2:30. A study of the judicial construction of the constitution of the United States from a political rather than from a legal point of view. Recitations. Professor Hodder.

4.—THE REVOLUTION AND THE CONSTITUTION. Three hours, 2d term, Monday, Wednesday, and Friday, at 2:30. A study of the causes and results of the American revolution and of the for-

mation of the constitution. Continues but not necessarily preceded by course 2. Professor Hodder.

5.—PUBLIC INTERNATIONAL LAW. Two hours, 2d term, Tuesday and Thursday, at 2:30. A statement of fundamental principles, illustrated by cases drawn from American diplomatic history. Lectures. Professor Hodder.

6.—PRESIDENTIAL ADMINISTRATIONS I. Five hours, 1st term, daily, at 3:30. The political and constitutional history of the United States from 1789 to 1840. A topical treatment of the most important phases of American history. The principal subjects of study are financial and tariff history, foreign relations, the rise and growth of political parties, the history of the slavery controversy, and the expansion of the United States. Open to all Seniors and Graduates. Open to other students by special arrangement. Professor Hodder.

7.—PRESIDENTIAL ADMINISTRATIONS II. Five hours, 2d term, daily, at 3:30. The political and constitutional history of the United States from 1840 to 1868. Treats the causes and results of the civil war. Continuation of course 6. Professor Hodder.

GRADUATE COURSE.

8.—SEMINARY IN AMERICAN HITSORY. 1st and 2d terms, Saturday, 10:15 to 12:15. An investigation, based upon sources, of limited periods or particular topics. Professor Hodder.

## EUROPEAN HISTORY.

Professor ABBOTT.
Assistant Professor BECKER.
Assistant Professor NOTESTEIN.
Miss CLARKE, Fellow.

EQUIPMENT.

The department of European history is provided with over fifty large wall-maps, forty smaller maps, besides historical charts and the more important historical atlases, together with a considerable number of framed portraits, engravings, and photographs. With the departments of American history, sociology, and economics, it occupies the large reading- and seminary-room on the second floor of the Spooner Library, and with the former it shares a smaller room for the use of more advanced students in investigation and seminary work. The general collection of books in European history comprises, in addition to a reference library, such sets as the Monumenta Historica Germaniæ, the Scriptores Rerum Italicarum,

the Parliamentary History, Reports of the Historical MSS. Commission, the English Statutes at Large, the Journals of the House of Lords and of the House of Commons, Howell's State Trials, and the series of English state papers, domestic, foreign, and colonial, now being completed as rapidly as possible.

ADVICE AS TO CHOICE OF COURSES.

The courses in European history are designed for three classes of students: those desiring only a general knowledge of history, those desiring to use their history in connection with work in other lines, and those desiring to specialize in history. The courses are so arranged as to offer continuous work along several lines. A course in general European history should cover courses 3, 4, 5, 6, 8, 9, 12, and 13, inclusive. In English history, courses 1, 2, 7, 15 and 16 are to be noted. For classical students, courses 3, 4, 14 and 19 will be found of special importance. For those specializing in modern languages, courses 5, 6, 8, 9, 12 and 21 will best supplement the work in French, German, Italian, and Spanish. For those specializing in English, see courses 1, 2, 7, and 12. The attention of those working in American history is especially called to the courses in English history and colonization, namely, 1, 2, 7, 10, and 11, as well as to course 12, in modern Europe. Special attention of those doing most of their work in history and those expecting to teach history is called to courses 17 and 18, in historical method. In general, it is expected that those intending to do work in European history in the Junior and Senior years will have had at least two of the courses offered in the Freshman and Sophomore years. Those expecting to receive recommendations to teach history will find it necessary to have taken courses 1, 2, 3, 4, 5, 6, at least five advanced courses, and the teachers' course, No. 18.

COURSES FOR UNDERGRADUATES ONLY.

1.—ENGLISH HISTORY I, 400–1485. Two hours, 1st term, Tuesday and Thursday, at 8, 9, 10, and 2:30. Open to all students of the College. Designed as an introduction to all history work of the Junior and Senior years. Recitations, with lectures and assigned reading. Assistant Professor Notestein.

2.—ENGLISH HISTORY II, 1485–1832. Two hours, 2d term, Tuesday and Thursday, at 8, 9, 10, and 2:30. A continuation of course 1. Assistant Professor Notestein.

3.—GREEK HISTORY. Two hours, 1st term, Tuesday and Thursday, at 9 and 11:15. Designed, with the following course, as an introduction to Junior and Senior work in European history, and

to accompany work in the classical departments. (See course 27, Greek department.) Recitations, with lectures and assigned reading. Open to all students of the College. Assistant Professor Becker.

4.—ROMAN HISTORY. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15 and 11:15. Designed, with the preceding course, as an introduction to Junior and Senior work in European history, and to accompany work in the classical departments. (See Greek course 27.) Recitations, with lectures and assigned reading. Open to all students of the College. Assistant Professor Becker.

5.—MEDIÆVAL HISTORY. Three hours, first term, Monday, Wednesday, and Friday, at 8 and 9. The history of Europe from the fall of Rome to the renaissance. A general course, designed, with the following course, especially as an introduction to the work in modern European history. (See also Greek course 28.) Recitations, lectures, and assigned reading. Open to all students of the College. Assistant Professor Becker.

6.—MODERN EUROPEAN HISTORY. Three hours, 2d term, Monday, Wednesday, and Friday, at 8 and 9. General course. The history of Europe from the renaissance to 1763. A continuation of the above, and designed, with it, to form an introduction to work in modern European history. Recitations, lectures, and reading. Assistant Professor Becker and Assistant Professor Notestein.

COURSES FOR UNDERGRADUATES AND GRADUATES.

7.—ENGLISH CONSTITUTIONAL HISTORY. Three hours, 1st term, Monday, Wednesday, and Friday, at 11. A general course in the elements of the constitution and administration of England, with special reference to modern English government and its constitutional principles at home and abroad. Open to Juniors, Seniors, and Graduates. Assistant Professor Notestein.

8.—EUROPE IN THE SEVENTEENTH AND EIGHTEENTH CENTURIES. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. The history of Europe from 1600 to 1789, with the emphasis on the political, economic and intellectual conditions which prepared the way for the French revolution. Lectures and recitations on assigned topics. Assistant Professor Notestein.

9.—THE FRENCH REVOLUTION AND NAPOLEONIC ERA. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. The history of Europe from 1789 to 1815. With additional requirements of reading and reports, may be counted as a graduate course. Lectures, recitations, and assigned reading. Open to Juniors and Seniors. Professor Abbott.

10.—European Colonization I. Two hours, 1st term, Tuesday and Thursday, at 10:15. The history of Europeans outside of Europe, from the sixteenth century to the present. A study of exploration, conquest, and settlement, and early history of European colonies and dependencies (Spanish America, Canada, Australia, India, etc.) Special attention will be given to the growth of the British empire, Open to Juniors, Seniors, and Graduates. With additional requirements of reading and reports, may be counted as a graduate course. Lectures, recitations, and assigned reading. Professor Abbott.

11.—European Colonization II. Two hours, 2d term, Tuesday and Thursday, at 10:15. The history of European peoples, colonies and dependencies outside of Europe, principally in the nineteenth century. It will include some account of the English self-governing colonies, especially Canada, Australia, and South Africa, the British, French, Dutch, German and Belgian colonial empires, the expansion of Russia, and outlines of the history of Mexico, the Central and South American states. Open to Juniors, Seniors, and Graduates. Professor Abbott.

12.—Political and Constitutional History of Modern Europe. Five hours, 2d term, daily, at 1:30. The history of Europe, including England, from 1815 to the present. Lectures, recitations, and assigned reading. Open to Juniors with permission, Seniors, and Graduates. Professor Abbott.

13.—European Constitutions. Two hours, 2d term, Tuesday and Thursday, at 11. A general study of the constitutional development of the principal European nations. Lectures, recitations, and assigned reading. Open to Juniors, Seniors, and Graduates. Assistant Professor Becker.

14.—Later Roman Empire. Two hours, 2d term, Tuesday and Thursday, at 9. Political and institutional history of the later Roman and Byzantine empire, from the third to the fifteenth century. Open to Juniors, Seniors, and Graduates. Lectures, recitions, and reading. Assistant Professor Becker.

15.—Advanced English Constitutional History. Three hours, 1st term, hours to be arranged. An advanced course in the constitutional history of England, chiefly from the documents. May be in connection with course 6 or separately. Open to Seniors and Graduates. Professor Abbott.

16.—Advanced English Constitutional History. Three hours, 2d term, hours to be arranged. Professor Abbott.

17.—Historical Method. One hour, 1st term, Thursday, at 8. Investigation and presentation. A course in the principles of

historical investigation and composition. Designed primarily for advanced students specializing in history and looking toward preparation for a thesis. Required of all candidates for the master's degree and recommended to all intending teachers of history. Study and practice in investigation and writing. Lectures, reports, assigned reading, and comparative study of historical compositions, theses, monographs, and histories. Professor Abbott and Assistant Professor Becker.

18.—Historical Method. One hour, 2d term, Thursday, at 8. Teachers' course. Designed primarily for those expecting to teach history in secondary schools. Required of all candidates for a teacher's certificate in history. Lectures and reports on methods, materials and preparation for teaching, including bibliography and uses of library. Assigned reading and conferences. Professor Abbott, Assistant Professor Becker, and Miss Watson.

19.—Roman Institutions of the Empire. Two hours, 1st term, hours to be arranged. Assistant Professor Becker.

20.—Mediæval Institutions. Two hours, 1st term, Tuesday and Thursday, at 10:15. A study of the political and ecclesiastical institutions of western Europe from the ninth century to the fourteenth. Lectures, recitations, and reading. Assistant Professor Becker.

21.—Renaissance and Reformation. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. A more advanced study of the intellectual and religious revolt of the fifteenth and sixteenth centuries. Assistant Professor Notestein.

22.—Historical Writers I. One hour, 1st term, Tuesday, at 8. In this and the ensuing course, the work of representative historians will be read; one author will be taken up each term. Required of candidates for the master's degree, and recommended to all advanced students in history. Professor Abbott.

23.—Historical Writers II. One hour, 2d term, Tuesday, at 8. A continuation of course 22. Professor Abbott.

24.—Seminary. Four hours, 1st term, by appointment. Graduate students and such Seniors as have permission will be admitted to the seminary, work in which will vary from year to year. While an endeavor will be made to fit particular conditions of the year and the needs of the students of that year in so far as possible, in general the plan will be to alternate from year to year between mediæval and modern European history, and within those fields to take up the study of the history of different countries and periods, as may seem advisable. Students who are planning to do advanced

work are therefore requested to consult the instructor at as early a date as possible. Professor Abbott.

25.—SEMINARY. Four hours, 2d term, hours by appointment. A continuation of course 20. Professor Abbott.

THESIS. Candidates for the degree of master of arts in this department are subject to the usual requirement of a thesis written under the direction of the department. This must be accompanied by reports and conferences, and should be preceded or accompanied by course 14. Hours for conference to be arranged with instructor. 2d term. Professor Abbott.

HISTORY CONFERENCE. The department of European history, with the cooperation of other departments in the College, carries on a conference of those interested in history and allied subjects, open to all members of the University. The meetings occur, ordinarily, once every two weeks between the Christmas and Easter recesses. Among the subjects of papers read before the conference during the past year were the following: "Napoleon's Marshals" (illustrated), Dr. A. W. Clark; "Decline of Witchcraft in England," Mr. Notestein; "Memoirs of Bachaumont," Mr. Becker; "Dante," Professor Galloo; "Colonel Blood," Professor Abbott.

## ITALIAN.

(See Romance Languages and Literatures.)

## LATIN LANGUAGE AND LITERATURE.

Professor WALKER.
Associate Professor OLIVER.
Assistant Professor HENDRIX.

### EQUIPMENT.

The department has about 1600 bound volumes, besides a considerable number of dissertations and other pamphlets; and its annual library appropriation enables it both to secure most of the important new books relating to its work and to fill up gaps in its present equipment. It has been the aim to secure a few of the most important editions of all authors and the most important works representing all branches of Latin study; but especial pains have been taken to provide an adequate apparatus for seminary work on Cæsar, Horace, Juvenal, and Vergil. There is also a good equipment for such courses as topography, private life, epigraphy, and political institutions. The department receives several classical journals and sets of studies and reports, and has complete sets of a few of the most important of them. In addition to the illustrative

material of the classical museum, the department has about 1000 photographs, illustrating especially the courses in topography and private life; and these are being added to rapidly.

ADVICE AS TO CHOICE OF COURSES.

To secure either a recommendation as teacher of Latin or a teacher's diploma in Latin, the student must elect at least twenty-five hours in the department of Latin beyond course 3. Courses 4*a* and 11 must be included. Other courses especially recommended to those who intend to teach are 5, 7, 8, 10, 12, 22, and 23, and the course in ancient history given by the department of European history. Those who wish to do the best work in Latin will need, in addition to a greater amount of Latin, some Greek and a reading knowledge of German.

COURSES FOR UNDERGRADUATES ONLY.

1.—PREPARATORY PROSE COMPOSITION. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. Bennett's Prose Composition, entire. Students whose preparatory course in Latin has been deficient in prose composition are required to take this course, for which no College credit will be given. Assistant Professor Hendrix.

2.—CICERO'S ORATIONS. Five hours, 2d term, Monday, Tuesday, Wednesday, Thursday, and Friday, at 1:30. The four against Catiline, the one for the Manilian Law, and the one for the Poet Archias. Lessons 23–44 of Bennett's Prose Composition. This course may be taken for College credit by students who enter with Cæsar and Vergil. It is required, without College credit, of those who enter with only Cæsar. Students who make up an entrance condition in Cicero under any private tutor will be examined by the department in both translation and composition. Associate Professor Oliver.

3.—VERGIL'S ÆNEID (six books). Five hours, Monday, Tuesday, Wednesday, Thursday, and Friday, 1st term, at 8; 2d term, at 11:15. With the study of mythology and careful practice in metrical reading. The chief stress will be laid on the literary side of the work. Open only to those who enter with three years of Latin and without Vergil. 1st term, Associate Professor Oliver; 2d term, Assistant Professor Hendrix.

4.—CICERO (De Senectute) and LIVY (one book). Five hours, 1st term, Monday, Tuesday, Wednesday, Thursday, and Friday, at 9. With prose composition and a thorough review of the grammar.

Open to all students who have had Cicero's Orations and Vergil. Assistant Professor Hendrix.

4*a*.—CICERO (De Senectute). Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15; and 2d term, Monday, Wednesday, and Friday, at 8. With prose composition and a thorough review of the grammar. This course may be taken instead of 4 by students whose preparatory work has been well done, and those who complete it satisfactorily will be admitted to course 5. 1st term, Associate Professor Oliver; 2d term, Assistant Professor Hendrix.

4*b*.—LIVY (one book). Two hours, 1st term, Tuesday and Thursday, at 11:15; and 2d term, Tuesday and Thursday, at 8. This course is open only to those who have taken or are taking 4*a*. 1st term, Associate Professor Oliver; 2d term, Assistant Professor Hendrix.

5.—HORACE (Odes). Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30; and 2d term, Monday, Wednesday, and Friday, at 9. With careful practice in metrical reading. The chief stress will be laid on the literary side of the work. Must be preceded by course 4 or 4*a*. 1st term, Assistant Professor Hendrix; 2d term, Associate Professor Oliver.

6.—TERENCE (two plays). Two hours, 2d term, Tuesday and Thursday, at 9. Must be preceded by course 4 or 4*a*. Professor Walker.

7.—CICERO'S LETTERS. Three hours, first term, Monday, Wednesday, and Friday, at 10:15. The chief stress will be laid on the historical points involved, so that the student gets a good knowledge of the period in which Cæsar and Cicero lived. The course is therefore especially helpful to teachers. Must be preceded by five hours beyond course 3. Professor Walker.

8.—HISTORY OF ROMAN LITERATURE. Two hours, 1st term, Tuesday and Thursday, at 10:15. Mackail's Latin Literature, supplemented by lectures. Open to all students. Associate Professor Oliver.

9.—HORACE (Satires and Epistles). Two hours, 2d term, Wednesday and Friday, at 10:15. Must be preceded by eight hours beyond course 3. Associate Professor Oliver.

10.—ROMAN PRIVATE LIFE. One hour, second term, Monday, at 10:15. Johnston's Private Life of the Romans, supplemented by occasional lectures and the use of illustrative material. Open to all students. Associate Professor Oliver.

11.—Prose Composition. Two hours, 2d term, Tuesday and Thursday, at 10:15. Must be preceded by course 4 or 4*a*. Professor Walker.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

12.—Advanced Prose Composition. Two hours, 1st term, Tuesday and Thursday, at 2:30. Open to Juniors, Seniors, and Graduates. Must be preceded by course 11. Professor Walker.

13.—Plautus. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3. Professor Walker.

14.—Vergil's Eclogues and Georgics. Two hours, 2d term, Tuesday and Thursday, at 10:15. Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3. Associate Professor Oliver.

15.—Lucretius. Three hours. (Not given in 1906–'07.) Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3.

16.—The Annals of Tacitus. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3. Associate Professor Oliver.

17.—Juvenal. Three hours. (Not given in 1906–'07.) Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3.

18.—Literature of the Empire. Three hours. (Not given in 1906–'7.) A study of the history of literature under the empire, supplemented by the reading of portions of the most important works not read in courses 16 and 17. Open to Juniors, Seniors, and Graduates. Must be preceded by twelve hours beyond course 3.

19.—The Topography of Rome. Two hours, 2d term, Tuesday and Thursday, at 9. Lectures and reading. Illustration by the use of photographs and stereopticon. Each member of the class will present a written report on a subject investigated by himself. Open to all Juniors, Seniors, and Graduates. Associate Professor Oliver.

20.—Roman Political Institutions. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. A study of the development and form of the Roman governmental system through the republic and the early empire. The course will be conducted by lectures and assigned readings. Open to all Juniors, Seniors, and Graduates who have had the full amount of preparatory Latin.

This course will be given in 1906–'07 if course 29 is not given. Assistant Professor Hendrix.

21.—INVESTIGATION IN ROMAN POLITICAL INSTITUTIONS. Two hours, 2d term, Tuesday and Thursday, at 9. Given only in connection with course 20. This course will be conducted by additional lectures, and by additional investigations by members of the course. Open to Seniors and Graduates who have specialized in Latin. Assistant Professor Hendrix.

22—CÆSAR'S GALLIC CAMPAIGNS. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. A critical study of the Gallic war, with especial reference to military, historical and geographical questions. The course is intended both as an introduction to the methods of the graduate seminary and as a practical course for teachers. Open to properly prepared Seniors and to Graduates. Professor Walker.

23.—VERGIL. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. A rapid survey of the contents of the Æneid, and a critical study of selected passages which involve difficulties of interpretation or of textual criticism. The course is intended both as an introduction to the methods of the graduate seminary and as a practical course for teachers. Open to properly prepared Seniors and to Graduates. Professor Walker.

24.—LATIN EPIGRAPHY. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. This course has as its object an acquaintance with the forms and subject-matter of Latin inscriptions. Members will be assigned investigations of the contributions of epigraphy to political, constitutional and economic history and to other fields. Open to Seniors and Graduates who have specialized in Latin. The course will be given in 1906-'07 if course 28 is not given. Assistant Professor Hendrix.

25.—INVESTIGATION IN LATIN EPIGRAPHY. Two hours, 1st term, Tuesday and Thursday, at 11:15. Given only in connection with course 24. Additional investigation of special topics will be expected of members of the course. Assistant Professor Hendrix.

26.—PROSEMINARY. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. An author or some limited portion of the field of Latin study is chosen each year for special investigation by the graduate students of the department. Exceptionally well-prepared Seniors may be admitted to the course. The work consists largely of papers by members of the course, the object being to train students for original investigation. Latin syntax has been chosen for the year 1906-'07. Professor Walker.

COURSES FOR GRADUATES ONLY.

27.—SEMINARY. Five hours, 2d term, at 11:15. A subject for the thesis required of all candidates for the degree of master of arts is expected to present itself in the course of the work, and in the second term a portion of the time is devoted to the working up of that subject. Professor Walker.

28.—SANSKRIT. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. An elementary course, employing Perry's Primer and Whitney's Grammar, with especial attention to the relation of Sanskrit to the other Indo-European languages. The course will be given in 1906–'07 if there is sufficient demand to warrant it. Open to those who have specialized in either Latin, Greek or German. Assistant Professor Hendrix.

29.—SANSKRIT (continued). Three hours, 2d term, Monday, Wednesday, and Friday, at 9. Lanman's Reader. Assistant Professor Hendrix.

## MATHEMATICS AND ASTRONOMY.

Professor MILLER.
Professor NEWSON.
Assistant Professor VAN DER VRIES.
Assistant Professor ASHTON.
Mr. SHIRK, Instructor.
Mr. PITCHER, Fellow.

EQUIPMENT.

The following represents the equipment for instruction in mathematics and astronomy:

MATHEMATICS. (*a*) *Models.* Eighty-eight models in wood, manufactured by Schröder, Germany. Fifty-three models of algebraic surfaces, embracing cubics, surfaces of revolution, ellipsoids, paraboloids, and hyperboloids, and intersections of the same, made of plaster of Paris, and weighted strings, also from Germany.

MATHEMATICS. (*b*) *Library.* The University library contains about 1000 volumes of mathematical works, including nearly all the standard treatises on all branches of mathematics. Among others, the following complete sets of journals are specially valuable: The American Journal of Mathematics, Annals of Mathematics, Bulletin and Transactions of the American Mathematical Society, American Mathematical Monthly, Mathematische Annalen, Acta Mathematica, Bulletin de la Societe Mathematique de France, Journal de Mathematiques pures et appliquees, Annali di Matematica, series III. On the bibliographical side are to be found the Jahrbuch der

Fortschritte der Mathematik and the Revue Semestrielle des Publications Mathematiques, both sets complete. There are, in addition, the collected works of several of the great mathematicians of the last century. Nearly all the mathematical journals of Europe and America are regularly received.

ASTRONOMY. A six-inch telescope, manufactured by A. Clark & Sons, with eye-glasses ranging in power from 30 to 600; a two-inch transit telescope; a sextant; a twenty-inch celestial globe; 400 astronomical slides; a projection lantern; a full set of E. L. Trouvelot's astronomical plates; star charts and maps; Hagan's Atlas Stellarum Variabilium; Huggins's Atlas of Representative Stellar Spectra; and Atlas Photographique de la Lune, by M. M. Loewy and M. P. Puiseux.

## *Mathematics.*

### ADVICE AS TO CHOICE OF COURSES.

Students who desire to take a full course in mathematics are advised to complete the following courses 1–8 by the end of the Sophomore year. These are a necessary preparation for the courses for advanced undergraduates and graduates. During the Junior and Senior years courses 9–17 may be taken in almost any order. These should all be completed by the end of the college course. Students specializing in mathematics are also advised to elect some work in logic and psychology, descriptive geometry and drawing, astronomy, and a full year's work in physics. Such students are also advised to acquire early in their course a reading knowledge of French and German. Usually for this purpose French 1 and 2 and German 1–4 are sufficient. Italian 1 and 2 will also be a great help.

Students who are preparing to become teachers of mathematics in high schools and academies should at least complete courses 1–8 and course 18. This is the minimum requirement for the recommendation of the department. But those aiming at real proficiency in mathematical teaching should take all the courses open to undergraduates.

### COURSES FOR UNDERGRADUATES ONLY.

1.—SOLID GEOMETRY. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. The usual theorems and constructions of standard text-books and applications to the mensuration of surfaces and solids. Phillips and Fisher's Solid Geometry. Open to all students who do not offer solid geometry for entrance. Assistant Professor Ashton and assistants.

2.—COLLEGE ALGEBRA. Three hours, both terms, Monday,

Wednesday, and Friday—1st term, at 8, 9, 11:15, and 2:30; 2d term, at 11:15 and 2:30. Rapid review of exponents, radicals, and quadratic equations; graphical representation; complex numbers; logarithms; determinants; theory of equations; numerical equations of higher degree. Hawkes's Advanced Algebra. Open to all students of the College. Assistant Professor Van der Vries and assistants.

3.—PLANE TRIGONOMETRY. Two hours, both terms, Tuesday and Thursday—1st term, at 8, 9, 11:15, and 2:30; 2d term, at 11:15 and 2:30. The six trigonometric functions; principal formulas of plane trigonometry; solution of triangles and practical problems. Miller's Trigonometry. Open to all students of the College. May be taken at the same time with course 1 or 2. Assistant Professor Ashton and assistants.

4.—ANALYTIC GEOMETRY I. Two hours, both terms, Tuesday and Thursday—1st term, at 10:15 and 11:15; 2d term, at 8, 9, 10:15, 11:15, and 3:30. The straight line and circle; plane and sphere; loci problems. Ashton's Analytic Geometry. Open to all students who have completed courses 2 and 3. Professor Newson and assistants.

5.—CALCULUS I. Three hours, both terms, Monday, Wednesday, and Friday—1st term, at 10:15 and 11:15; 2d term, at 8, 9, 10:15, 11:15, and 3:30. Differential calculus; fundamental principles; derivatives; applications to geometry and mechanics; maxima and minima; indeterminates; series. Granville's Calculus. Open to students who have completed or are taking course 4. Professor Miller and assistants.

6.—ANALYTIC GEOMETRY II. Two hours, Tuesday and Thursday—1st term, at 10:15 and 1:30; 2d term, at 9 and 10:15. Conic sections; higher plane curves; solid analytics. Ashton's Analytic Geometry. Open to students who have completed course 4. Professor Newson and assistants.

7.—CALCULUS II. Three hours, Monday, Wednesday, and Friday—1st term, at 10:15 and 1:30; 2d term, at 9 and 10:15. Integral calculus; integration; definite integrals; application to lengths, areas, and volumes. Granville's Calculus. Open to students who have completed course 5; may be taken at the same time with course 6. Professor Miller and assistants.

8.—CALCULUS III. Three hours, both terms, Monday, Wednesday, and Friday—1st term, at 9; 2d term, at 11:15. A continuation of courses 5 and 7; application of calculus to problems in geometry, centers of gravity; moments of inertia, etc. Granville's Calculus completed. Open to students who have completed course 7. Professor Newson and Assistant Professor Ashton.

9.—Spherical Trigonometry. Two hours, 2d term, Tuesday and Thursday, at 9. Principal formulas; solution of spherical triangles; applications to navigation and astronomy. Open to students who have completed courses 1, 2, and 3. Miller's Trigonometry. Professor Miller.

18.—Teachers' Course. Two hours, 2d term, Tuesday and Thursday, at 9. Designed for teachers and students preparing to become teachers of mathematics. It embraces the history, pedagogy and mutual relations of the mathematical subjects usually taught in the public schools from the beginning of the seventh grade to the end of the high-school course. This course consists of (1) history of mathematics, reading, and lectures; (2) a comparative study of the mathematical curricula of the schools of this country and of Europe; (3) discussions on the best methods of presenting the topics; (4) practice teaching. Open to students who have completed courses 1–7. Professor Newson.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

10.—Higher Algebra. Two hours, 1st term, Tuesday and Thursday, at 1:30. Introduction to the theory of numbers; proofs of the elementary laws of algebra; theory of limits; convergency of infinite series; uniform convergence; differentiation and integration of series; infinite products. Open to students who have completed the undergraduate courses. Assistant Professor Ashton.

11.—Theory of Equations. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. General properties and transformation of equations; algebraic solutions of the cubic and quartic; Sturm's theorem; numerical solution of algebraic and transcendental equations. Open to students who have completed courses 1–8. Assistant Professor Van der Vries.

12.—Differential Equations. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. Methods of solving ordinary and partial differential equations; applications to geometry and physics. Open to students who have completed courses 1–8. Professor Miller.

13.—Analytic Mechanics. Three hours, 2d term, Monday, Wednesday, and Friday, at 10:15. Geometry of motion; kinematics; statics; dynamics of a particle and of a rigid body. Open to students who have completed courses 1–8. Professor Newson.

14.—Solid Analytic Geometry. Two hours, 1st term, Tuesday and Thursday, at 11:15. Analytic geometry of planes, lines, spheres, and quadric surfaces. Open to students who have completed courses 1–8. Assistant Professor Van der Vries.

15.—Advanced Analytic Geometry. Two hours, 2d term, Tuesday and Thursday, at 1:30. Point and line coordinates; poles and polars; reciprocal polars; projection. Open to students who have completed courses 1–8. Assistant Professor Ashton.

16.—Advanced Calculus. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. Partial differentiation and integration; definite integrals; elliptic integrals; double and multiple integrals; Green's theorem. Open to students who have completed courses 1–8. Professor Newson.

17.—Complex Numbers. Two hours, 1st term, Tuesday and Thursday, at 9. Analytic and geometric properties of complex numbers; condition of functionality; circular transformations, applications. Open to students who have completed courses 1–8. Professor Newson.

COURSES FOR GRADUATES ONLY.

19.—Quaternions (theory and application). Three hours, by appointment. Professor Miller.

20.—Projective Geometry. Three hours. Geometry of the projective group in the plane and in space; analytic and synthetic methods; applications to non-Euclidian geometry. By appointment. Professor Newson.

21.—Advanced Analytic Geometry and Higher-plane Curves. Three hours. General methods; cubics and quartics; general theory of algebraic curves. By appointment. Assistant Professor Van der Vries.

22.—Theory of Functions of a Complex Variable. Three hours. Theories of Cauchy, Weierstrass, and Rieman; integration; conformal representation; algebraic functions and their integrals. By appointment. Assistant Professor Ashton.

23.—Galois's Theory of Equations. Three hours. The application of the method of groups to the study of algebraic equations. By appointment. Assistant Professor Ashton.

24.—Theory of Transformation Groups. Three or five hours. An analytic and synthetic treatment of various transformations of space, emphasizing the notion of a group of transformations. The groups of collineations, conformal transformations, motions and contact transformations are considered. By appointment. Professor Newson.

25.—Theory of Surfaces and Twisted Curves. Three hours. Properties of surfaces of the third and fourth orders. and of certain other general classes of surfaces; also properties of twisted

curves of the third and fourth orders. By appointment. Assistant Professor Van der Vries.

26.—THEORY OF FUNCTIONS OF A REAL VARIABLE. Three hours. The real number system, point aggregates, limits, continuity, differentiation, integration, proper integrals, improper integrals. By appointment. Professor Newson.

*Astronomy.*

COURSES FOR UNDERGRADUATES ONLY.

These courses are open to Juniors and Seniors of the College.

1.—DESCRIPTIVE ASTRONOMY. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Lectures and recitations, with occasional evenings for observation. Text-book, Comstock's Astronomy. Professor Miller.

2.—PRACTICAL ASTRONOMY. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. Theory of least squares. Use of a sextant and transit instrument, determination of time, latitude and longitude, etc. Text-book, Doolittle's Practical Astronomy. Professor Miller.

COURSE FOR ADVANCED UNDERGRADUATES AND GRADUATES.

3.—CELESTIAL MECHANICS. Three hours. Text-book, Moulton's Celestial Mechanics. By appointment. Professor Miller.

## MINERALOGY.

(See Geology.)

## MUSIC.

*Harmony and Musical Analysis.*

Courses 1 to 3 are open to graduate students and Juniors and Seniors, the work counting as one full course. Courses 4 and 5 are open to students of all classes. Courses 1, 2, and 3, are subject to the schedule of fees in the fine arts department. Courses 4 and 5 are open to all students without fee.

1.—HARMONY. Two hours, both terms, Tuesday and Thursday, at 2:30. The study of overtones, scales, intervals, the formation and connection of triads and seventh chords with their inversions; close and open harmony; the harmonization of melodies and basses and of original melodies. Practical work at the piano. Chadwick's Harmony used. Professor Skilton.

2.—HARMONY. Two hours, 1st term, Tuesday and Thursday, at 3:30. The study of modulations and the inharmonic material of

music. Chadwick's Harmony used. Open only to those who have completed course 1. Professor Skilton.

3.—Musical Analysis. Two hours, 2d term, Tuesday and Thursday, at 3:30. The simple homophonic forms, the phrase, section, period, two-part song, three-part song, song with trio. Composition of such forms. Open only to those who have completed courses 1 and 2. Professor Skilton.

4.—Musical Appreciation. One hour, 1st term, Monday, at 2:30. A course for those who wish to learn to understand music as listeners, without necessarily learning to perform. The different styles of music are explained and illustrated with special reference to the University concerts. Professor Skilton.

5.—Development of Music. One hour, 2d term, Monday, at 2:30. Open only to those who have taken course 4. Detailed examination of famous compositions with reference to the history of their time and country. Professor Skilton.

## PHARMACY.

Professor Sayre.
Mr. Emerson.

### EQUIPMENT.

(See equipment, under School of Pharmacy.)

### COURSES FOR ADVANCED UNDERGRADUTES.

1.—Physiological and Medical Chemistry. Five hours, 2d term, 1:30 to 3:30. This course is offered to meet the requirements of medical students. Products of physiological interest are separated from animal tissues and organs and studied in detail. Special attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second part of the course consists of five weeks of urinalysis, embracing lectures, recitations, and work in both chemical and microscopical laboratories. Professor Sayre and Mr. Emerson.

2.—Advanced Work in Physiological Chemistry. Analysis of dietetics used in medicine, quantitative valuation of proximate constituents of foods, assay of digestive ferments, and the separation of organic principles of animal tissues, etc. Professor Sayre and Mr. Emerson.

## PHILOSOPHY.

Professor TEMPLIN.
Professor BOODIN.
Assistant Professor HOGG.
Miss GREENE, Fellow.

### EQUIPMENT.

The philosophical library contains about 1800 volumes, including complete sets of the leading philosophical and psychological periodicals published in the English, German and French languages. These are all available for students working in the department, and are kept in a special departmental reading-room of the general library.

The work in experimental psychology is carried on in a laboratory equipped with gas, water, and electric currents, direct and alternating, and a considerable supply of apparatus of various kinds, such as is used in modern psychological laboratories. A shop arranged for work in wood, metal and glass enables the instructor and students to improvise many pieces of apparatus not already provided.

### COURSES FOR UNDERGRADUATES ONLY.

1. ELEMENTS OF PSYCHOLOGY. Given each term. Three hours, Monday, Wednesday, and Friday, at 9. A general study of mental processes and their laws. Lectures, text-book, and reports, together with laboratory work. James's Psychology is used as a text. Three hours a week of laboratory work are required. This serves to illustrate the principles of psychology and furnishes training in psychological observation. This course is required for admission to all of the following courses in the department except course 2, which may be taken at the same time. Open to Sophomores, Juniors, and Seniors. Professor Boodin and Assistant Professor Hogg.

2.—INTRODUCTION TO PHILOSOPHY. Two hours, both terms, Tuesday and Thursday, at 9. A general survey of the methods, aims and results of the various natural sciences, their relations to each other, and their ultimate significance. The course thus serves as an elementary introduction to philosophy. Lectures and assigned readings. Should be preceded by elementary courses in the biological sciences and physical sciences. Open to all students in the College who have completed or are taking course 1. Professor Templin.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

3.—Experimental Psychology. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. A laboratory course, following the laboratory work of course 1. Additional work in sensation is first given, followed by a study of the processes of perception, attention, affection, and association. Titchener's Experimental Psychology Laboratory Manual is used as a text. Assistant Professor Hogg.

4.—Genetic Psychology. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. An attempt at a broad study of the genesis and growth of mental life in the individual. Open to Juniors and Seniors who have had course 1. Assistant Professor Hogg.

5.—Educational Psychology. Three hours, 1st term, lectures on Tuesday and Thursday, at 9; two hours' laboratory work, by appointment. This course will consist of a deeper study of the general principles of psychology as involved in attention, association, memory, and apperception, considered with special reference to the work of the teacher. Lectures, assigned readings in standard authors, and reports, together with laboratory work. The laboratory work will occupy two hours a week and will supplement the work of the classroom. Professor Boodin and Assistant Professor Hogg.

6.—Social Psychology. Two hours, 2d term, Tuesday and Thursday, at 9. The study of the social consciousness as involved in the genesis and growth of social institutions, the psychology of the crowd and of religion. The work is based upon the writings of Adam Smith, Baldwin, Tarde, James, Starbuck, Coe, etc. Professor Boodin.

7.—Logic, Deductive and Inductive. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. A text-book course, based on Welton's Manual of Logic. Emphasis is placed on the theory of induction. Open to Juniors and Seniors who have had course 1. Assistant Professor Hogg.

8.—History of Philosophy. Three hours, 1st term, Monday, Wednesday, and Friday, at 8. This course outlines the principal movements or tendencies in the history of thought, beginning with the Greek thinkers. In the study of Greek philosophy especially, the attempt is to show how the philosophical problems became differentiated from the other problems of thought, such as the religious and scientific. Throughout the course careful attention is paid to the relation of the philosophical movements to the move-

ments of history in general. The work is conducted by lectures, assigned readings in a text, in the standard histories, and in the authors themselves. Credit towards a graduate degree will be given for this course only if it is succeeded by course 9. Professor Boodin.

9.—History of Philosophy. Three hours, 2d term, Monday, Wednesday, and Friday, at 8. A continuation of course 8. Open to students who have had course 8 and to others only on special permission of the instructor. Professor Boodin.

10.—Philosophical Classics. Two hours, 1st term, Tuesday and Thursday, at 8. This course furnishes an opportunity for a first-hand and systematic study of some of the more important works and movements in the history of philosophy. The authors taken up will vary with succeeding terms. The course may be pursued together with or following the work in history of philosophy but not independently of it. To accommodate students desiring to carry both these subjects, they are offered at the same hour but on alternate days. Professor Boodin.

11.—Philosophical Classics. Two hours, 2d term, Tuesday and Thursday, at 8. A continuation of course 10. Professor Boodin.

12.—Introduction to Metaphysics. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. This course first of all outlines the problems of philosophy proper according to their development in the history of thought. It further aims to acquaint the student with the dominant tendencies of present-day thinking, with a view to making him more conscious of his own meaning. As in the following course, the aim is to be constructive and not merely analytic. Lectures, with reading and discussion of some of the important authors of modern idealism. Professor Boodin.

13.—Introduction to the Philosophy of Religion. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. This course takes up some of the fundamental religious concepts from a philosophical point of view, such as the nature of religion comparatively studied, the conception of God, the problem of evil, the problem of immortality, the place or distinctive contribution of Christianity in history, etc. The work will be conducted by lectures, with discussion of the more important recent contributions, such as those of Royce, James, the Cairds, and C. C. Everett. The applicants for the course should have completed the courses in history of philosophy and metaphysics or such other preparation as the instructor may deem sufficient. Professor Boodin.

14.—Systematic Ethics. Three hours, 1st term, Monday, Wed-

nesday, and Friday, at 9. This course undertakes a critical examination into the psychological foundations of human conduct, a review of the historic ethical theories, and the development of a satisfactory system of ethics. This program includes a study of the following subjects: The emotions, conscience, and will; the Hellenic, Christian, mediæval and modern conceptions of life; hedonism, utilitarianism, socialism, formalism, asceticism, and idealism; responsibility and freedom, duty, right, and virtue, benevolence and justice, guilt and redemption, progress and perfection. The course should be preceded by as many of the foregoing courses as possible, but must be preceded by course 1. Professor Templin.

15.—Practical Ethics. Two hours, 2d term, Monday and Wednesday, at 9. The application of theoretical principles of conduct to practical problems of life. Following are some of the subjects that will be discussed: Childhood and its problems; the family and the home; the school, the press, the state, and the church; the production, distribution and use of property; professional life, temperance, fashion, and luxury; citizenship, government, and punishment; science, literature, art, culture, and religion. Must be preceded by course 14. Professor Templin.

16.—Esthetics. Two hours, 2d term, Tuesday and Thursday, at 8. A historical and constructive treatment of the problem of the beautiful, followed by an application of esthetic theory to nature and the fine arts. Lectures, discussions, and assigned readings. Professor Templin.

## PHYSICAL EDUCATION.

Associate Professor Naismith.
Miss Fish.

Until the completion of the new gymnasium, classes will be held in the basement of Snow Hall, which, while inadequate to the needs of the University, affords opportunity for regular exercise. The main floor is eighty-six feet long by thirty-six wide. The equipment consists of light and heavy apparatus, such as clubs, wands, dumb-bells, foils, horses, parallel bars, vaulting and horizontal bars, rowing machines, and pulley weights. A room is set apart for special development, and there are facilities for most of the indoor games. Baths and lockers are provided in separate rooms.

### ADVICE AS TO CHOICE OF COURSES.

Courses 6, 7, 8, 9 and 10 are designed for those who intend to teach this subject.

Course 12 is designed for teachers, to give them such a knowl-

edge of the growth and development of the child that they will be able to care for the health of the pupil and to arrange his studies to suit his development.

Courses 11 and 12 are arranged with reference to the course in domestic science.

COURSES FOR UNDERGRADUATES ONLY.

1.—HYGIENE. One hour, 1st term. Lectures designed to help the students to maintain health, dealing with food, clothing, exercise, conditions conducive to study, prophylactic treatment, especially in regard to infectious and contagious diseases. Required of Freshmen.

2.—MARCHING. One hour, 1st term. Elementary work in free-hand, dumb-bells, wands, and clubs; hygienic work on the apparatus; sprinting, jumping; gymnastic games for recreation. Required of Freshmen.

3.—ADVANCED WORK IN FREE-HAND. Two hours, 2d term. Calisthenics, and hygienic work on the apparatus; athletics of an all-round nature; games for skill and physical judgment. Required of Freshmen.

4.—EDUCTIONAL WORK WITH LIGHT AND HEAVY APPARATUS. One hour, 1st term. Fencing and broadsword; games requiring skill and self-control; squad leading in calisthenics and apparatus work. Required of Sophomores.

5.—SPECIALIZING IN SOME LINE OF EXERCISE. One hour, 2d term. Boxing and wrestling; conducting games, competitions, and exhibitions. Required of Sophomores.

6.—LEADERS' CLASS. Two hours, by appointment. Analysis of gymnastic movements; invention of drills and combination of exercises; conducting classes; the use of safety methods and apparatus. Open to Juniors and Seniors.

Those physically qualified may elect the following in their season, in place of the foregoing: Football, baseball, tennis, basket-ball, track and field athletics, hockey, and lacrosse. This work must be under the appointed coach or leader, in order to obtain credit.

Additional courses will be arranged for special work and prescribed work which cannot be done in class.

Every student may receive a thorough medical and physical examination, with the results platted on a chart. Where needed, special exercise will be prescribed.

Every student using the gymnasium or who is a candidate for any University team must pass a satisfactory medical and physical examination.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

7.—Mechanical Anatomy. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. The study of the bones, articulations and muscles in their relations as mechanical principles. The location of the viscera. The distribution of the principal nerves and blood-vessels, and the topography of the muscles. Open to Juniors and Seniors. Associate Professor Naismith.

8.—The Principles of Athletic Sports and Games. Two hours, 1st term, Tuesday and Thursday, at 9. The analysis of the different athletic events, methods of teaching, the relation of the various games, the physique and mental power that is required in and developed by the different sports. Associate Profesor Naismith.

9.—Physical Education. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. Dealing with the effects of exercise on the various systems of the body; history of the subject; prescription of exercise, and mechanical therapeutics. Associate Professor Naismith.

10.—Physical Diagnosis. Two hours, 2d term, Tuesday and Thursday, at 9. Medical, physical and functional examinations; anthropometry and its applications. Associate Professor Naismith.

11.—Physical Education of Children. Three hours, 2d term, Monday, Wednesday, and Friday, at 8. Including the growth of the child and conditions that affect its development; effect of physical, mental and emotional strain. Relation of physical condition to the development of character and mental ability; methods of obtaining the best results. Associate Professor Naismith.

12.—Development of School Children. Two hours, 2d term, Tuesday and Thursday, at 8. Study of the normal periods of adolescence; the development of the nerve centers; tendencies to abnormalities; signs of incipient illness; signs of fatigue and strain; the examination of children for hindrances to study and development. Associate Professor Naismith.

## PHYSICS.

Professor BLAKE.
Acting Professor HILL.
Assistant Professor M. E. RICE.
Assistant Professor STIMPSON.

### EQUIPMENT.

For lecture purposes there is a large lecture-room supplied with water, gas, and both direct and alternating currents. The apparatus available is sufficient to illustrate all the ordinary experiments usually given in a year's course in college physics and to show some of the more advanced experiments.

There are three large general laboratory rooms and seven smaller rooms for special work, each supplied with water, gas, and several electrical power circuits. The apparatus for general physics is sufficient to enable each student to perform all the experiments usually described in manuals of college physics. For advanced work the equipment includes a number of pieces of fine apparatus in heat, light, and electricity; and there is regularly employed a mechanician, who is constantly making auxiliary apparatus and occasionally more complicated special pieces. The entire equipment is being increased as rapidly as possible.

The department library contains the more important English, French and German periodicals, with bound volumes for twenty or thirty years. These include the Philosophical Transactions of the Royal Society, the *Philosophical Magazine*, the *Journal de Physique*, Drude's *Annalen and Beiblatter*, and others. There is also included a good number of the standard treatises and of more elementary works for the general student.

### ADVICE AS TO CHOICE OF COURSES.

Courses 7 to 13 are open to Juniors and Seniors of the College who have had the necessary preparation. Courses 1, 2, 3, 4, 5 and 6 are open to all students of the College. Courses 9 to 13 are open to graduate students.

Courses 10, 11, 12 and 13 may be extended beyond one term, with approval of the instructor.

### COURSES FOR UNDERGRADUATES ONLY.

1 and 2.—These courses, elementary physics, have been dropped, as there was so little demand for them. Students who have to make up high-school physics will take it in the Lawrence high school or as below.

3 and 4.—General Physics. Three hours, throughout the year, Monday, Wednesday, and Friday, at 9. Experimental lectures and recitations. Open to students of the College. A knowledge of high-school physics and of plane trigonometry will be assumed. Mature students who have not had high-school physics may take this course if they elect at the same time at least two hours from courses 5 and 6. Assistant Professor Stimpson.

Courses 3 and 4 constitute one single, complete course, and may not be taken separately.

5.—Physical Measurements. Two, three or four hours, 1st term, Tuesday and Thursday, from 8 to 10, and Monday and Wednesday, from 3:30 to 5:30. A laboratory course, coordinate with courses 3 and 4. Open to students of the College. A knowledge of high-school physics and of plane trigonometry will be assumed. Mature students who have not had high-school physics may take this course if they elect at the same time course 3. Assistant Professor M. E. Rice.

6.—Physical Measurements. Two, three or four hours, 2d term, Tuesday and Thursday, from 8 to 10, and Monday and Wednesday, from 3:30 to 5:30. The requirements are like those for course 5. Assistant Professor M. E. Rice.

7.—Mechanics, Sound, and Heat. Five hours, 1st term, Monday, Tuesday, Wednesday, and Thursday, at 11:15, and one laboratory period. A fundamental course of experimental lectures and recitations. Open to Juniors and Seniors who have had plane trigonometry and analytical geometry. Professor Blake and Assistant Professor Stimpson.

8.—Electricity, Magnetism, and Light. Five hours, 2d term, Monday, Tuesday, Wednesday, and Thursday, at 11:15, and one laboratory period. Continuation of physics 7. Open to Juniors and Seniors who have had plane trigonometry, analytics, and calculus. Professor Blake and Assistant Professor Stimpson.

COURSES FOR UNDERGRADUATES AND GRADUATES.

9.—An Introduction to Mathematical Physics. Either term, by appointment. A theoretical course in general principles. Open to Juniors, Seniors and Graduates who have had physics 7 and 8, or physics 3, 4, 5, and 6. A ready, working knowledge of calculus is necessary. Professor Blake and Assistant Professor M. E. Rice.

Courses 10, 11, 12 and 13 consist of more specialized study of the subjects of 9, embracing both mathematical and experimental presentations. Open to Juniors, Seniors and Graduates who have had calculus, physics 3, 4, and 5, 6, or 7 and 8.

10.—KINEMATICS AND DYNAMICS. Properties of matter. Either term, by appointment. Professor Blake or Assistant Professor M. E. Rice.

11.—ACOUSTICS AND THERMICS. Either term, by appointment. Professor Blake or Assistant Professor M. E. Rice.

12.—OPTICS. Either term, by appointment. Professor Blake or Assistant Professor M. E. Rice.

13.—ELECTRICS. Either term, by appointment. Professor Blake or Assistant Professor M. E. Rice.

## PHYSIOLOGY.

Professor HYDE.
Demonstrator, ——

### EQUIPMENT.

The physiological department is thoroughly equipped with approved, modern apparatus for demonstration and experimental work. Besides a large lecture-room that seats 100 students, it possesses a department library for the use of the students, which contains the latest reference books and all of the best physiological journals. There is a large laboratory for the students of the College that contains tables particularly designed for their work. In this laboratory are, besides the needed instruments, digesters, spirometers, kymographs, manometers, and all kinds of electrical apparatus, a skeleton, and a finest French manikin.

The research-room is fitted up with necessary tables, instruments and electrical apparatus for any kind of physiological experiments. There is also a large preparation room, where most of the material is prepared, and a storeroom.

### ADVICE AS TO CHOICE OF COURSES.

Course 1 is recommended especially to general students and to those who intend to specialize in domestic science.

Course 2 is designed for students who are preparing to teach.

1.—PHYSIOLOGY. Five hours, 1st term, (*a*) daily, at 1:30. A general course, especially designed to be introductory to the more advanced work in domestic science. The first half of the course is devoted to a study of the structure and functions of the human body, by means of lectures, recitations, demonstrations, and laboratory experiments. Laboratory fee, seventy-five cents. The second half consists of the study of the elements of hygiene and applied therapeutics, with special reference to home life. Open to Sophomores. Professor Hyde.

2.—PHYSIOLOGY. Five hours, 2d term, three days, at 11:15; two days, at 10.15. Lectures, demonstrations, and laboratory work. Laboratory fee, one dollar. A general course in physiology, designed for those who intend to specialize in the sciences. Open to students of the College who have taken chemistry 1. Professor Hyde.

3.—PHYSIOLOGY. Investigation of special subjects. Open to Juniors and Seniors who have completed physiology 2. Five hours, either term or both, by appointment. Professor Hyde.

COURSE FOR GRADUATES AND ADVANCED UNDERGRADUATES.

6.—PHYSIOLOGY. Experimental physiology and original research. Open to Juniors, Seniors and Graduates who have taken not less than a year of anatomy and physiology and have given evidence that they are prepared for it. Five hours, either term or both, by appointment. Professor Hyde.

COURSE FOR GRADUATES ONLY.

7.—PHYSIOLOGY. Advanced experimental physiology. Open to graduates who have taken not less than a year of anatomy and have given evidence that they are prepared for it. Recitations and lectures, with demonstrations, conferences and journal club and laboratory experimental work. Ten hours, 1st term (*b*), 8 to 12:15; 2d term, 8 to 11:15. Professor Hyde.

## PSYCHOLOGY.

(See Philosophy.)

## PUBLIC SPEAKING AND DEBATE.

Associate Professor FRAZIER.

EQUIPMENT.

Students in this department will find in the library the collected orations of the leading American orators from the early colonial period to the present time, all of the better-known English orators, and specimens of the oratory of Greece, Rome, and modern France and Germany. In addition, there is a representative list of the early and the more recent writers who deal with the theory of oratory. The students in debate have access to the economic, history and sociology seminary rooms in Spooner Library.

ADVICE AS TO CHOICE OF COURSES.

Work in this department is arranged to meet the needs of two classes of students: (1) Those who wish merely a preliminary training in public speaking and reading; and (2) those who wish to spe-

cialize to some extent in these subjects. Students of class 1 should elect courses 1 and 2 during the Freshman or Sophomore years, and, if possible, course either 3 or 8 during the Junior or Senior years. Students of class 2 should elect their courses in catalogue order, and consult with the instructor as to collateral courses to be pursued. All students contemplating taking work in this department are urged to join one of the literary societies of the University, as supplementary to the classroom work.

COURSES FOR UNDERGRADUATES ONLY.

1.—PRINCIPLES OF SPOKEN DISCOURSE. Three hours, both terms, Monday, Wednesday, and Friday, at 9 and 10:15. Open to all students of the College. A course designed to be introductory and preparatory, rather than technical. Training in the theory of oratory, in the analysis and delivery of famous speeches, and in the construction and oral presentation of original speeches; drill in speaking from outline and in the use of manuscript. Lectures and required library reading. The enrolment in any section of this course is limited to twelve students. Associate Professer Frazier.

2.—ARGUMENTS AND DEBATES. Two hours, both terms, Tuesday and Thursday, at 9 and 10:15. Lectures and recitations on the principles of argumentation as applied to oral discussion. The work will consist of regular classroom debates conducted by affirmative and negative debating teams. The more simple questions will be chosen. Each side will submit its brief and write a forensic covering the argument of each debate. Should be preceded by course 1, although this is not necessary. Associate Professor Frazier.

3.—ORAL DEBATES. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. The object of this course is to give the student a more advanced training in debate. The fundamental principles of debating will be discussed in detail; lectures will be given on the collecting and arranging of material. There will be weekly debates by the members of the class. Open to Juniors and Seniors who have had public speaking 2 or rhetoric 5 and 6. Associate Professor Frazier.

4.—ORAL DEBATES. Two hours, 2d term, Tuesday and Thursday, at 4:30. Advanced course. A thorough investigation of a limited number of subjects taken from the field of political economy, sociology, and history. Conferences, classroom discussion, and criticism. Open to Juniors and Seniors who have had public speaking 3. Associate Professor Frazier.

5.—EXPOSITORY ADDRESSES. Three hours, 2d term, Monday,

Wednesday, and Friday, at 3:30. A study of the form and requirements of the expository address. The subject-matter for the speeches in this course will be chosen exclusively from economic subjects. Open to Juniors and Seniors who have had public speaking 1 and economics 1. (Not given in 1906–'07.) Associate Professor Frazier.

6.—READING ALOUD. Two hours, 1st term, Tuesday and Thursday, at 11:15. The aim of this course is to give the student suggestions and helps which will enable him to read aloud intelligently, simply, and with appreciation. There will be lectures and classroom drill. Associate Professor Frazier.

7.—FORMS OF PUBLIC ADDRESS. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. The study and practice of the forms of demonstrative oratory—the eulogy, the after-dinner speech, political oratory, anniversary and commemorative addresses, nominating speeches, responses, and platform addresses. Library work covering the literature of the subject. (Not given in 1906–'07.) Associate Professor Frazier.

8.—EXTEMPORE SPEAKING. Two hours, 2d term, Tuesday and Thursday, at 11:15. The object of this course is to train the student to think and to speak on his feet. Special attention will be given, in the first place, to the construction of the speech, to the gathering and outlining of the material; and, in the second place, to the natural and effective delivery of the material thus arranged. Associate Professor Frazier.

## ROMANCE LANGUAGES AND LITERATURES.

Professor GALLOO.
Assistant Professor LINCOLN.*
Assistant Professor BASSETT.
Assistant Professor LE DUC.
Assistant Professor NEUENSCHWANDER.
Assistant Professor VAUGHAN.
Miss COPLEY, Fellow.†
Miss MOSSLER, Fellow, *vice*.

### EQUIPMENT.

The department of Romance languages and literatures possesses a collection of illustrative material consisting of several hundred photographs, stereopticon slides, maps, plans, plaster casts, etc., representing historical features of French life, in costume, architecture, etc., as well as persons, places and things that have a closer and more definite relation to literature or to special literary

*Absent on leave, 1905–'06. † Resigned.

works. The library of this department contains 2838 volumes, and receives ten French and two Spanish periodicals.

### *French.*

#### ADVICE AS TO CHOICE OF COURSES.

The first eight courses must be taken in the order given below. Upon completion of these, students whose aim is to gain accuracy and ease in writing and speaking French and a thorough knowledge of the grammar are advised to select courses 9 and 10. Advanced students should also take German as a collateral study.

Students of French literature should begin with courses 16 and 17. Students in the literature courses are recommended to take mediæval and modern European history.

Those especially interested in the linguistic study of French should take courses 19 to 21, inclusive, which, with courses 22 to 25, are open only to advanced students. Students in linguistics should have a good reading knowledge of Latin as a basis.

A reading knowledge of Spanish and Italian should precede graduate study in this department.

The head of the department will, on application, outline a course for students intending to specialize in or teach French.

#### COURSES FOR UNDERGRADUATES ONLY.

1.—ELEMENTARY FRENCH I. Grammar (Fraser and Squair) and easy reading. Five hours, 1st term, daily, at 8, 9, 10:15, 11:15, or 1:30; also given in the 2d term, five hours, daily, at 11. Drill in pronunciation and forms. Open to all students who have had three years of Latin or three years of German. Professor Galloo, Assistant Professor Le Duc, Assistant Professor Neuenschwander, or Assistant Professor Vaughan.

2.—ELEMENTARY FRENCH II. Five hours, 2d term, daily, at 8, 9, 10:15, 11:15, or 1:30; also given in the first term, five hours, daily, at 9. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition. Professor Galloo, Assistant Professor Le Duc, Assistant Professor Neuenschwander, or Assistant Professor Vaughan.

3.—MODERN FRENCH PROSE. Three hours, both terms—1st term, Monday, Wednesday, and Friday, at 9 or 10:15; 2d term, Monday, Wednesday, and Friday, at 8. Translation and reading of some works of Mérimée, George Sand, Anatole France and René Bazin. Assistant Professor Neuenschwander or Assistant Professor Le Duc.

4.—Composition. Two hours, both terms, Tuesday and Thursday, at 9 or 10:15. Written exercises intended chiefly as a grammatical review. Oral exercises. Dictation. Assistant Professor Le Duc or Assistant Professor Neuenschwander.

5.—French Prose and Poetry. Three hours, 2d term, Monday, Wednesday, and Friday, at 9 or 10:15. Reading of representative works of the seventeenth, eighteenth and nineteenth centuries. Assistant Professor Le Duc or Assistant Professor Neuenschwander.

6.—Corneille and Racine. Two hours, 2d term, Tuesday and Thursday, at 9. Reading of four or five of their greatest tragedies. Assistant Professor Le Duc.

7.—Molière. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. Careful study of the more important plays, rapid reading of the others; reports in French by members of the class. Prerequisites: Two courses chosen from 3, 5, or 6. Professor Galloo.

8.—Composition and Conversation. Two hours, 1st term, Tuesday and Thursday, at 11:15. Practice in writing and speaking French. Must be preceded by course 4. Professor Galloo.

9.—Advanced Composition. Two hours, 2d term, Tuesday and Thursday, at 11:15. Translation, original composition, and practice in speaking French. Must be preceded by course 8. Professor Galloo.

10.—Teachers' Course. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. Systematic review of the grammar from the point of view of the requirements of elementary instruction. Outlines of historical grammar. Study of methods of teaching languages and practice in teaching. Must be preceded by courses 4 and 8. Professor Galloo.

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES.

11.—French Literature of the Sixteenth Century.. Two hours, 2d term, by appointment. The renaissance in French literature. The Pléiade. The beginnings of French classicism. Professor Galloo.

12.—French Literature of the Seventeenth Century. Two hours, 2d term, by appointment. A study of the development of French literature from the renaissance to the end of the reign of Louis XIV. Professor Galloo.

13.—French Literature of the Eighteenth Century. Two hours, 2d term, by appointment. Special attention is paid to the life and works of Voltaire; study of Montesquieu, Rousseau, and

the encyclopedists; the dramatists. Assistant Professor Neuenschwander.

14.—The Romantic School (1800–1835). Three hours, 1st term, Monday, Wednesday, and Friday, at 9. A study of the rise of romanticism in France and of its characteristic products in poetry and the drama. Lamartine, A. de Vigny, and A. de Musset. Professor Galloo.

15.—The Romantic School (1800–1835). Two hours, 2d term, Tuesday and Thursday, at 9. This is a continuation of course 14, and will be devoted especially to Victor Hugo's works. Professor Galloo.

16.—Development of the French Novel. Two hours, 1st term, Tuesday and Thursday, at 9. A survey of the novel in the seventeenth and eighteenth centuries. Professor Galloo.

17.—Development of the French Novel. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. The novel in the nineteenth century, with special reference to the origin and growth or realism and naturalism. Professor Galloo.

18.—History of Early French Literature. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. From the earliest times to the classic period. Lectures, recitations, and private readings. Professor Galloo.

19.—History of Modern French Literature. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. From the classic period to the present day. Lectures, recitations, and private readings. Professor Galloo.

20.—The French Drama. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. A study of the development of the theater in France from the origin to the period of Augier and Dumas fils. Lectures, recitations, and written reports. Assistant Professor Le Duc.

21.—History of the French Language. Three hours, 1st term, by appointment. Its rise from low Latin; the additions from other sources; its growth and modifications. Professor Galloo.

22.—Old French. Two hours, 2d term, by appointment. An introduction to French philology. Chrestomathie du Moyen âge (Paris et Langlois) or Chrestomathie de l'ancien français (Constans). Professor Galloo.

23.—Old French. Two hours, 1st term, by appointment. A continuation of course 22. Reading of the Extraits de la Chanson de Roland (Gaston Paris), with special attention to the phonetic changes and the inflections. Professor Galloo.

COURSES FOR GRADUATES ONLY.

24.—Old French. Three hours, 1st term. Phonology and morphology of old French, with some discussion of syntax. Le Pèlerinage de Charlemagne à Jérusalem; Aucassin et Nicolete. Must be preceded by courses 20 and 21 or their equivalents. Professor Galloo.

25.—Provençal. Two hours, 1st term, by appointment. Grandgent's Provençal Phonology and Morphology and Bartsch's Chrestomathie Provençale. Assistant Professor Vaughan.

26.—Mediæval French Literature. Three hours, 2d term, by appointment. From the first literary monuments to the renaissance. Professor Galloo.

27.—Molière. Three hours, 1st term, by appointment. Same course as 7, with additional requirements. Study of Molière; his life and surroundings; his plays—their sources and influence. One or more essays will be written, preferably in French. Professor Galloo.

*Spanish.*

Students are advised to take, as preparation, courses 1 and 2 in French.

COURSES FOR UNDERGRADUATES ONLY.

1.—Elementary Spanish. Five hours, 1st term, daily, at 10:15 or 11:15; also given in the 2d term, at 2:30. An outline of grammar (Hills and Ford). Reading of short stories. Elementary composition. Assistant Professor Bassett or Assistant Professor Vaughan.

2.—Continuation of course 1. Five hours, 2d term, daily, at 10:15 or 11:15; also given in 1st term, at 2:30. Grammar and composition. Reading of easy modern prose: Carrión-Aza, Pérez Galdós, Palacio Valdés, Emilia Pardo Bazán. Assistant Professor Bassett or Assistant Professor Vaughan.

3.—Modern Spanish. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. Some notable writers of the nineteenth century: Alarcón (Cosas que fueron), Cavallero (La Gaviota), Pereda (Sotileza), Valera (Doña Luz), Núñez de Arce (El Haz de Leña). Assistant Professor Bassett.

4.—Composition. Two hours, 1st term, Tuesday and Thursday, at 2:30. Systematic practice in speaking and writing Spanish, based on Ramsey's *Lo Esencial del Lenguaje castellano*, and Spanish of Ramsey's Grammar (selected lessons); Ford's Exercises for Spanish Composition (or corresponding material). Must be preceded by course 2 or its equivalent, and may be taken to supplement course 3.

5.—ADVANCED COMPOSITION. Two hours, 2d term, Tuesday and Thursday, at 2:30. A continuation of course 4, by which it should be preceded. It may be taken to supplement course 5.

COURSE FOR GRADUATES AND ADVANCED UNDERGRADUATES.

6.—CERVANTES. Three hours, 2d term, Monday, Wednesday, and Friday, at 2:30. Reading of Don Quixote, part I. Themes and special reports. Assistant Professor Bassett.

*Italian.*

Students are advised to take, as preparation, courses 1 and 2 in French.

COURSES FOR UNDERGRADUATES ONLY.

1.—ELEMENTARY ITALIAN. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. Grammar. Reading, De Amicis's Cuore. Assistant Professor Vaughan.

2.—Continuation of course 1. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. Grammar, composition, and reading of modern authors. Assistant Professor Vaughan.

3.—GRAMMAR AND READING. Two hours, 1st term, Tuesday and Thursday, at 1:30. This course may be taken in connection with course 1. Assistant Professor Vaughan.

4.—WRITERS OF THE CINQUECENTO. Two hours, 2d term, Tuesday and Thursday, at 1:30. Must be preceded by course 3. Assistant Professor Vaughan.

COURSE FOR ADVANCED UNDERGRADUATES AND GRADUATES.

5.—DANTE. Three hours, by appointment, 1st term. The *Divina Commedia*; its relation to its age, and its importance in the history of the Italian language and literature. For 1906–'07, *Il Inferno* (Scartazzini). Assistant Professor Vaughan.

## SANSKRIT.

(See Latin Language and Literature.)

## SPANISH.

(See Romance Languages and Literatures.)

## SOCIOLOGY AND ECONOMICS.

Professor BLACKMAR.
Assistant Professor CONE.
Assistant Professor BOYNTON.
Miss CORA A. TAYLOR, Fellow.

### EQUIPMENT.

Instruction in the department of sociology and economics is conducted chiefly by lectures, and reading and investigation in the library, aided in certain courses by text-books. The University library contains about 3000 volumes relating to the courses of instruction. All of the principal magazines treating of the work of the department are on file in the reading-room for the use of the students. In addition there are charts, maps, and outlines. A limited amount of investigation of social conditions is carried on.

### ADVICE AS TO CHOICE OF COURSES.

Courses 1, 2, 3 and 4 lay the foundation of subsequent work in sociology, although it is possible for students who have studied either economics or history to take courses 5, 6, and 7. Courses 1, 2, 3 and 4 are designed to give a general knowledge of the subjects treated. Courses 5, 6 and 7 are for advanced work and are especially designed for those who desire to specialize in sociology.

Courses 8 and 9 are designed for a general survey of anthropology. They are general culture studies but also relate to other courses in sociology.

Economics 1 is an essential foundation to subsequent courses in economics. Economics 2 and 3 lay the foundation for economics 9, 10, 11, and 12. It is very desirable that students should consult with the instructors before choosing a group of studies in the department of sociology and economics, as there are five more or less distinct lines of work, namely, sociology proper, ethnology, economic theory, economic history, and statistics and finance.

### *Sociology.*

Courses 1 to 10, inclusive, are open to Juniors and Seniors of the College. These courses may also be taken by graduate students, with such additional work as may be required by the instructor.

### COURSES FOR GRADUATES AND ADVANCED UNDERGRADUATES.

1.—ELEMENTS OF SOCIOLGY I. Three hours, 1st term, Monday, Wednesday, and Friday, at 1:30. This is a general course in the foundations and principles of sociology. It includes the careful survey of social origins, social evolution, social structure, social activities, and social organization. It is a study of the nature of so-

ciety in its concrete forms from an evolutionary standpoint. Much attention is given to the causes which have produced society. A concrete study of a community is required of each student. Professor Blackmar.

2.—Elements of Sociology II. Two hours, 2d term, Tuesday and Thursday, at 1:30. A continuation of course 1. Special attention is given to social ideals and social inequalities; social telesis; methods of sociological investigation; development of sociology. Professor Blackmar.

3.—Social Pathology I. Two hours, 1st term, Tuesday and Thursday, at 1:30. A general study of poverty, pauperism, crime, and social degeneracy, and their causes, prevention, and remedy; a study of the causes of epilepsy and insanity. Professor Blackmar.

4.—Social Pathology II. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. Administration of charitable and correctional affairs; management of jails, reformatories, penitentiaries, and institutions for defectives and dependents; conditions of the slums and rural populations; housing of the poor; defects of social organization and societies. Remedial agencies. Each student is required to visit at least two social institutions and report on the same. Professor Blackmar.

5.—Socialization and Social Control. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. This course is designed to give a thorough study in pure sociology. It has to do with social forces, social laws, and the origin and development of social control. It involves a study of aggregation, association, and cooperation, as well as social inequalities and methods of overcoming their evil effects. Professor Blackmar.

6.—Psychological Sociology. Two hours, 2d term, Tuesday and Thursday, at 2:30. Origin, development and characteristics of the social mind; psychical activities; psychology of the crowd and the "mob"; psychology of political and social institutions. Professor Blackmar.

7.—Social and Economic Statistics. Two hours, 2d term, Tuesday and Thursday, at 10:15. A practical course in social relation and social problems by the statistical method. Students are instructed in the technique of statistics and the scope and meaning of statistical inquiry. A practical knowledge is derived from the handling of statistical data and in the construction of statistical tables, tabulations, etc. By the preparation of diagrams, charts, etc., in the laboratory, the graphic method is also introduced. It is aimed to make the course a practical one by the study

of such sociological phenomena as populations, vital statistics, birth-rates, marriage-rates, death-rates, divorce, immigration, migration, etc., and in the investigation of such economic subjects as prices, trade and internal commerce, agricultural and manufacturing growth, and such industrial activities as admit of statistical inquiry. Some knowledge of economics and sociology is desirable. (Not given in 1906–'07; alternates with economics 19.) Assistant Professor Boynton.

8.—General Anthropology. Three hours, 1st term, Monday, Wednesday, and Friday, at 3:30. The natural history of man. The probable origin and antiquity of man. Comparison with the anthropoid apes. Man's physical, mental and social characteristics. Methods of obtaining food, shelter and distribution over the earth. Evidences of Tertiary man. Relics of man found in the gravel drift, caves, and mounds. The beginnings of art and industry. The division of labor. The origin and development of language. Lectures and library work. Professor Blackmar.

9.—Ethnology. Two hours, 2d term, Tuesday and Thursday, at 3:30. Origin of races and ethnic groups. Racial differentiation and development. Characteristics of ethnic society. Why some ethnic groups survive and others become extinct. The conflict and survival of races. Their geographical distribution. Influence of geographical and physical environment. Comparison of natural and civilized races. Classification of existing races. Modern race problems. Lectures and library work. Professor Blackmar.

10.—The Family. Two and one-half hours, daily, at 2:30. The origin and growth of the family historically considered. The family as the unit of society. The relation of husband and wife and of parents and children. The economic basis of family life. The psychology of family life. The family as the type of society. Its importance in the preservation of society. The pathology of the family. The relation of the family to the general social organism, politically, religiously, and socially. Professor Blackmar.

COURSES FOR GRADUATES ONLY.

Not more than one of the following courses given in each term:

11.—Social and Political Theories. Five hours, by appointment. The first part of this course is devoted to the study of ancient and modern political theories. The laws of Moses as exemplified in the Hebrew commonwealth, Plato's Republic, Aristotle's Theory of Government, St. Augustine's City of God, Dante's De Monarchia, Machiavelli's Prince, Campanella's City of the Sun,

More's Utopia and Bacon's Atlantis are the principal works read and criticized. The second part of the term is devoted to modern socialistic theories, including French and German socialists and recent development in social democracy. Conducted as a seminar. Professor Blackmar.

12.—American and European Charities. Five hours, by appointment. Research course. This course is especially for those who are looking forward to charity work or administration. A study of charity administration in the United States and some of the principal cities of Europe. Personal investigation of American charitable institutions with special reference to methods of state control. Professor Blackmar.

13.—American Ethnology. Three hours, by appointment. Research course in the natural races of America. Migration and geographical distribution of tribes. Comparative characteristics of tribes and ethnic groups. Government and organization of tribes. The beginnings of civilization, the food-supply, and the progress in the industrial arts. Professor Blackmar.

*Economics.*

Courses 1 to 3, inclusive, are open to all students of the College. Courses 4 to 16 are for Juniors and Seniors, but may be taken also by Graduates, with the addition of such extra work as may be required by the instructor.

COURSES FOR UNDERGRADUATES ONLY.

1.—Elements of Economics. Five hours, 1st term, Monday, Wednesday, and Friday, at 3:30; 2d term, Tuesday and Thursday, at 3:30. This course endeavors to develop and explain the general laws of man's activity in the production, distribution and consumption of wealth. It serves, therefore, as the basis for a scientific understanding of industrial actions and relations, and as an aid to getting the fullest benefit from the following courses. Some of the main topics studied are: The nature and influence of economic wants; the nature and cause of value; the factors of production and their organization; the influences determining the shares of product distributed as rent, wages, interest, and profits. Assistant Professor Cone.

2.—Economic History of England. Three hours, 1st term, Monday, Wednesday, and Friday, at 9. The object of this course is to trace and explain the general development of agriculture, industry and commerce in England. The period covered extends from the Saxon invasion to the present time, and special attention is given

to early agriculture, early town life, merchant and craft gilds and other corporate privileges, and the rise of commerce, trade routes, markets, and fairs. Special industries and their effect on English life are traced. The agrarian revolution, the peasants' revolt, enclosures; the national policy in industry and trade, the mercantile system and the effect on English commerce, the great inventions of the eighteenth century, and the causes and nature of the industrial revolution, together with certain aspects of the English industrial supremacy of the past century, form the concluding features of the course. Assistant Professor Boynton.

3.—Economic History of the United States. Three hours, 2d term, Monday, Wednesday, and Friday, at 9. The study of the economic development of the United States from the earliest colonial times down to the present is undertaken in this course. Attention is given to colonial agriculture, industry, and trade. The effect upon American life of the westward expansion, the economic significance of slavery in the South and in the country at large, the industrial development of the North prior to the civil war, and such important subjects as the history of the tariff, monetary legislation, the causes and effects of commercial crises, the development of railway transportation, the resources of the nation and the rise and importance of American manufactures will receive due attention. Finally, a survey will be made of the present industrial situation under corporate methods and of the outlook for democratic control of industrial conditions. Should be preceded by course 2. Assistant Professor Boynton.

COURSES FOR UNDERGRADUATES AND GRADUATES.

4.—Money and Credit. Two hours, 1st term, Tuesday and Thursday, at 3:30. Training in economic reasoning and a systematic knowledge of the fundamental principles of currency in its various forms are the chief aims of this course. The principal forms of money and of credit, as developed in the experience of the principal countries, and as at present in use in various parts of the world, are studied. Must be preceded or accompanied by course 1. Assistant Professor Cone.

5.—Banking. Two hours, 2d term, Tuesday and Thursday, at 1:30. Banking institutions, as the principal sources of credit in a readily usable form, are studied, both as to the principal historical steps in their development and as to their present forms and methods in different countries. The banking systems of the United States receive especial attention, including the suggestions for reform of the present organizations. Must be preceded by course 4. Assistant Professor Cone.

6.—Financial History of the United States. Three hours, 2d term, Monday, Wednesday, and Friday, at 3:30. This course will give a consecutive view of the experience of this country in providing mediums of exchange, in providing sources of government revenue, and in caring for and using the revenue. The laws of the United States in regard to currency, banking, public revenue, expenditure, and debt, the methods of administering those laws, and the resultant conditions, will be examined. The variety of this experience will furnish illustrations of the principles studied in courses 4, 5, and 7. Must be preceded or accompanied by course 1. Assistant Professor Cone.

7.—Public Finance. Three hours, 1st term, Monday, Wednesday, and Friday, at 2:30. The theory of government expenditure is studied, illustrated by some reference to the experience of various governments. The different sources of government revenue are examined, taxation receiving chief attention. The creation, management, refunding and extinguishment of public debt are discussed. Must be preceded by course 1. Assistant Professor Cone.

8.—Corporate Finance. Two hours, 1st term, Tuesday and Thursday, at 2:30. The financial side of large business operations, as met with chiefly in corporations, is studied. Some of the topics considered are: The nature and relations of stocks and bonds in different forms; the methods pursued in marketing securities; the causes of stock-watering. All are examined with a view to giving a better understanding of both the private and public signficance of frequently misunderstood corporate actions. This course is closely related to course 16. Must be preceded by course 1. Assistant Professor Cone.

9.—History of Commerce and Commercial Geography. Three hours, 1st term, Monday, Wednesday, and Friday, at 10:15. A brief survey is made of the commerce and trade routes of the ancient peoples surrounding the Mediterranean sea, of the effect of the crusades and of the stimulus given to mediæval commerce by the Italian cities and the Hanseatic League, the position of the trader and the merchant, together with the commodities of early commerce; the restrictions, monopolies, trading companies and national policies with reference to trade are also discussed. The effects on Europe of the period of discovery and colonization are also traced. The development of the commerce of the separate nations is concluded to the present time, the policies they have pursued in securing it, and the natural advantages each possesses in the competition of the world market. Considerable attention is devoted to the sources of raw materials, to the location of the de-

mand and supply of finished products, and to the governmental activities to stimulate national prestige along commercial lines. Should be preceded by courses 1 to 3, inclusive. Assistant Professor Boynton.

10.—Economic Resources and Activities of European Countries. Two hours, 2d term, Tuesday and Thursday, at 9. The studies of the natural resources of industrial nations and their present economic life and activity will be the subject-matter of this course. The present condition of agriculture, mining, manufacturing, and industry in general, together with the internal trade and foreign commerce of each country, will be investigated, and the governmental policies designed to encourage industry and trade will also be a feature of the course. Finally, the trade relations of these countries among themselves and with other nations and their competition for the markets of the world will conclude the investigation of the subject. Should be preceded by courses 1 to 3, inclusive, or course 9. Assistant Professor Boynton.

11.—History and Development of Transportation. Two hours, 1st term, Tuesday and Thursday, at 11:15. Primitive and improved methods of transportation are studied in their economic aspects. The historical development of the canal and the railway and their relation to each other and to society in this and other countries are traced. Special attention is given to this development in the United States. This course is designed as preparation, in part, for course 12, and should be preceded by courses 1 to 3, inclusive, and course 9. Assistant Professor Boynton.

12.—Railway Rates and Government Regulation. Three hours, 2d term, Monday, Wednesday, and Friday, at 11:15. This course involves a study of the theory of railway rates, competition in transportation, and the problems of local and individual discrimination. State interference, regulation and ownership receive attention. The experience of state railway commissions and the work of the Interstate Commerce Commission will be reviewed, and the efforts by recent legislation, state and national, to deal with the problems arising in connection with transportation will conclude the course. This course should be preceded by course 11. Assistant Professor Boynton.

13.—History of Trade-unionism and Labor Organization. Three hours, 1st term, Monday, Wednesday, and Friday, at 11:15. The growth and nature of labor organizations since the appearance of a distinct wage-earning class in society will be traced. Special consideration will be given to the growth of trade-unionism in England during the past 100 years, and to the more recent devel-

opment of the labor movement in the United States, Germany, and Australasia. Methods of remuneration, viz., cooperation, profit-sharing, and the wages system, receive attention; likewise the teaching and bearing of economic theory on the question of wages and the laboring class. This course should be preceded by courses 1 to 3, inclusive. Assistant Professor Boynton.

14.—PRESENT LABOR PROBLEMS. Two hours, 2d term, Tuesday and Thursday, at 11:15. This course has to do with present-day problems connected with labor—the problems arising from the existence of a laboring class and an employing class. Their mutual relations and the natural difficulties arising between them are considered, and the effects of these relations and of the often conflicting interests, not only upon the two parties, but upon the public as well, will receive due attention. This course should be preceded by course 13. Assistant Professor Boynton.

15.—INSURANCE. Three hours, 2d term, Monday, Wednesday, and Friday, at 2:30. The economic principles underlying all forms of insurance, and especially the theory of the equalization of the burden of loss, receive careful attention. The general economic nature of risk is pointed out, risks are classified, and those falling in the insurable class are given especial attention. The different groups of insurance—marine, fire, life—and various newer extensions of the principles to other kinds of risks, are treated. The various forms of insurance organization, as stock companies, mutual and fraternal organizations, and various modifications of these, are considered. Must be preceded by course 1. Assistant Professor Cone.

16.—ACCOUNTING. Two hours, 2d term, Tuesday, and Thursday, at 2:30. The object of this course is to develop the economic principles underlying the so-called higher accounting, which aims to give at all times a true and complete, but condensed, representation of the real condition of the particular business to which it is applied. In order to succeed in this, it must be based upon the most careful economic analysis. Some typical illustrations, taken from the practice of large corporations, will be studied. This course is closely related to course 8. Must be preceded by course 1. Assistant Professor Cone.

17.—ECONOMIC THEORY, TO ADAM SMITH. Two hours, 1st term, Tuesday and Thursday, at 1:30. The growth of thought about economic matters in ancient, mediæval and modern times, down to about the end of the eighteenth century, is studied, chiefly from the works of the original writers, although the histories and commentaries are not ignored. This study furnishes many points for suggestive contrast and comparison between earlier and later theo-

ries, and explains many otherwise incomprehensible features of modern economic theories. Must be preceded by course 1. (Not given in 1906–'07; alternates with course 18.) Assistant Professor Cone.

18.—Economic Theory since Adam Smith. Two hours, 1st term, Tuesday and Thursday, at 1:30. The extensive and important economic literature of the nineteenth century is the subject-matter of this course. The important economists are all studied at first hand, and occasional attention is given to the works of minor writers, in cases where their writings contain important germs of theories later developed by others of greater prominence. This course serves not only to explain the growth of present views but also to give a fuller body of economic doctrine than can be given in course 1. Must be preceded by course 1. (Not given in 1907–'08; alternates with course 17.) Assistant Professor Cone.

19.—Economics of Agriculture. Two hours, 2d term, Tuesday and Thursday, at 10:15. A course in the economics of agriculture, with special reference to American conditions. Attention will be directed to the settlement of the public domain, to the policy of the government in securing this end, to the present efforts of the government in reclaiming waste areas by irrigation, and to the organized work and cooperation of the Department of Agriculture. The peculiar natural advantages of various sections and their opportunities for cheapened transportation, the statistics of crop production, together with the markets at home and abroad for agricultural products, and the competition encountered, will be features of the course. The important subjects of land values, rents, and taxation, in their special bearing on agricultural lands, likewise find a place in this course. (Given in 1906–'07; *not given* in 1907–'08; alternates with sociology 7.) Assistant Professor Boynton.

20.—Seminar of Sociology and Economics. Two hours, each term, by appointment. This is a research course for advanced students. Applicants for admission to the seminar must satisfy the instructors of their preparation and ability to undertake original investigation. Each student must pursue a definite line of work under the direction of one of the instructors. Professor Blackmar, Assistant Professor Cone, and Assistant Professor Boynton.

## ZOÖLOGY.

Associate Professor McCLUNG.
Professor DYCHE.
Associate Professor HUNTER.
Assistant Professor BAUMGARTNER.
Miss DUKE.
Mr. HOSKINS, Fellow.

### EQUIPMENT.

The department is in the possession of ample facilities in the way of specimens and apparatus for the presentation of the courses outlined below. The extensive collections of birds and mammals are now rendered accessible by their location in the new Museum Building. The historical development of vertebrate life is made teachable by the large paleontological collection in the museum. Representative types of invertebrates from the Atlantic and Pacific coasts, as well as from Bermuda, make possible the thorough treatment of almost any of the lower orders. Histological, cytological and embryological material of great variety has been provided. Microscopes, microtomes and other apparatus necessary for even the most advanced work are at hand. The well-equipped preparation rooms make instruction in the museum very thorough.

### ADVICE AS TO CHOICE OF COURSES.

Course 1 is designed as an introduction to the subject, and, so far as possible, gives a general survey of the animal kingdom. The character of the work is such as to lay particular stress upon training in the independent observation and correlation of facts. It is, therefore, a course which may be taken by those who wish merely to gain a general idea of zoölogy and to become acquainted with the methods of scientific work. As an elementary course it forms a basis for any advanced work. Taken with course 1 in botany, it completes a year's training in elementary biology.

Course 2 logically follows course 1, and should be taken by those who desire a more comprehensive view of the subject than can be gained in a half-year's study. While more advanced in character than the first course, is is not too technical for the general student. It should be taken by all wishing to continue in the more advanced courses.

Course 3 may be taken with advantage by students who have had course 1, or preferably 1 and 2, and who expect to teach zoology in the high school without making a specialty of the subject.

Course 4 is the last of the general courses, and completes the work of preparation desirable for students who wish to take up a detailed study of zoölogy in more or less limited fields. It may fol-

low courses 1 and 2 in the case of students who choose to enter directly into systematic work.

Students contemplating the study of medicine are recommended to take not less than ten hours of work in zoölogy. Arrangements will be made to provide such students with as much comparative anatomy as possible. Consultation should be had with the head of the department, early in the course, for the purpose of arranging the work.

In all cases students are urged to secure during their Freshman and Sophomore years as much training as possible in physics, chemistry, botany, and the modern languages.

COURSES FOR UNDERGRADUATES.

1.—ELEMENTARY ZOÖLOGY. Five hours, 1st term, 1:30 to 3:30. A course in the general principles of zoölogy. The work consists of a laboratory study of type specimens, together with lectures upon classification, habits, distribution, etc. Open to all students of the College. Associate Professor McClung and Assistant Professor Baumgartner.

2.—MORPHOLOGICAL ZOÖLOGY. Five hours, 2d term, 1:30 to 3:30. A continuance of the work begun in course 1, pursued, however, in a more thorough and detailed way. The chordates are studied principally. Open to all students of the College who have taken course 1. Associate Professor McClung and Assistant Professor Baumgartner.

COURSES FOR UNDERGRADUATES AND GRADUATES.

3.—TEACHERS' COURSE. 1st term, daily, 3:30 to 5:30. A course in zoölogy for those who expect to teach. Methods used in collecting, preserving and preparing specimens for the museum and classroom. Methods of instruction. Open to all who have taken courses 1 and 2 or their equivalent. Professor Dyche.

4.—SYSTEMATIC AND DESCRIPTIVE ZOÖLOGY. Throughout the year, 3:30 to 5:30. Lectures, with exhibition of specimens. Laboratory work in systematic zoölogy. Open to Juniors, Seniors and Graduates who have taken courses 1 and 2. Professor Dyche.

5.—HISTOLOGY, OR MICROSCOPIC ANATOMY. Five hours, 1st term, Monday, Wednesday, and Friday; 2d term, Tuesday and Thursday, 3:30 to 5:30. Microscopical manipulation, the study of normal tissues and the methods of preparing mounted objects are presented in this course. Lectures and laboratory work. Open to Juniors, Seniors and Graduates who have taken courses 1 and 2 or equivalents. Assistant Professor Baumgartner.

6.—Cytology, or Cellular Biology. Five or ten hours, throughout the year, by appointment. A course in cell structure and development. Lectures and laboratory work. Open to Juniors, Seniors and Graduates who have taken courses 1 and 2. Associate Professor McClung.

7.—Embryology. Five hours, 2d term, by appointment. The ontogeny of the chick, shark, etc. Open to Juniors, Seniors and Graduates who have taken course 6. Associate Professor McClung.

8.—Paleozoölgy. Five hours, by appointment. A course dealing with the succession of animal life upon the earth. Open to Juniors, Seniors and Graduates who have had courses 1 and 2. Geology 1 is recommended as further preparatory work. Associate Professor McClung.

9.—Echinoderms. Five hours, by appointment. This course deals with the development and morphology of echinoderms. Open to Juniors, Seniors and Graduates who have taken courses 1 and 2. Associate Professor Hunter.

10.—Vermes. Five hours, by appointment. The development and morphology of vermes. For those who intend to study medicine, special attention is given to parasitic forms. Associate Professor Hunter.

11.—Seminar. One or two hours, 1st and 2d terms. An opportunity is offered a limited number of sufficiently prepared students to take up the literature of important researches upon special topics or upon general biological problems. The results obtained must be embodied in carefully prepared papers and given in the form of lectures.

COURSES FOR GRADUATES ONLY.

12.—Advanced Original Work in Morphological Zoölogy. Five or ten hours, throughout the year, by appointment. Associate Professor McClung.

13.—Advanced Original Work in Systematic and Descriptive Zoölogy. Five or ten hours, throughout the year, by appointment. Professor Dyche.

14.—Advanced Original Work in Histogenesis and Organogenesis. Five or ten hours, throughout the year, by appointment. Associate Professor McClung.

15.—Advanced Original Work in Cytology. Five or ten hours, throughout the year, by appointment. Associate Professor McClung.

16.—Advanced Original Work in Vertebrate Paleon-

TOLOGY. Five or ten hours, throughout the year, by appointment. Associate Professor McClung.

17.—MUSEUM WORK AND METHODS. Five or ten hours, by appointment. Professor Dyche.

18.—COMPARATIVE ANATOMY AND OSTEOLOGY. Five or ten hours, by appointment. Professor Dyche.

Students desiring to do graduate work in the department must be able to read French and German, and must have special preparation for the work they wish to undertake. It is recommended that at least twenty hours' work be offered for the major requirement of the master's degree.

# Courses in Business

**In its Higher Relations.**

**Leading to General Business, Banking, Insurance, and Journalism.**

## Leading to the Degree of Bachelor of Arts.

The following courses do not in any sense form a school of commerce or business, nor is such a school contemplated. They are organized within the College of the University. They are not, except as to the regular required work of all students in the College, required courses, but are made up of the electives open to all students alike.

The courses are designed, however, to offer to the large number of men who enter business from the University somewhat the same definite assistance that it gives those who are to be engineers, lawyers, etc. This has been made possible by a large development of late years of special courses in language, history, mathematics, sociology, and economics. It is not expected that the University can do more than to organize into programs of study leading to definite ends such courses as now may be offered, and such others, few in number, as it may be possible to add. The University does not seek to furnish that large portion of business training which can come only from experience. It undertakes to give the fundamental and specialized courses of study that illustrate the economic forces that control the business world. It aims at the same time to give the cultural training which is indispensable to the thoroughly enlightened citizen.

## Lectures.

In addition to the regular classroom work, lectures will be given by men eminent in the profession or calling which they represent. The lectures will have for an object the illustrating from experience of the theory presented in the classroom, and of the relation of the fundamental principles enumerated in the courses to actual experience. Students in these courses will be expected to attend the lectures.

## Grade of the Work.

The following courses are therefore based upon the requirements for entrance to the College, and also upon the required work of the Freshman and Sophomore years. The remaining work is in the main definitely suggested for the guidance of the student in his

choice of subjects. It is also rather more exacting in its requirements than the average work elected by students.

### Courses of Study.

**Freshman and Sophomore Years, in All Courses.**

In the Freshman and Sophomore years, the courses in general business, insurance, banking and journalism are alike.

### Requirements.

1. Students entering these courses must have met the requirements for admission to the Freshman class of the College.
2. Students entering these courses must do also all the required work of the Freshman and Sophomore years, as laid down in this catalogue.
3. After doing the required work of the Freshman and Sophomore years, thirty hours of work remain in those years, which should be so distributed that not less than three hours of work are taken in each of the following subjects:

English.
Foreign Language.
Physical Science (Physics if not taken in high school and if Insurance is wanted).
Biological Science.
Elements of Economics.
European History.
Mathematics.*

### Courses in General Business.

JUNIOR YEAR.

*First Term:*

American Jurisprudence and Elementary Law, or Contracts. Five hours.
History of Commerce and Commercial Geography. Three hours.
Elements of Sociology. Three hours.
Foreign Language, or English. Two or three hours.
Physical Science, or Mathematics. Three or two hours.

*Second Term:*

Financial history of the United States. Three hours.
Economic Resources and Activities of European Countries. Two hours.
Constitutional Law. Three hours.

*Students entering the Freshman class with plane trigonometry, or who take plane trigonometry in the Freshman year, may take surveying here.

International Law. Two hours.
English, or Foreign Language. Three or two hours.
Mathematics, or Physical Science. Two or three hours.

SENIOR YEAR.

*First Term:*

Public Finance. Three hours.
Corporate Finance. Two hours.
Social Pathology. Two hours.
Transportation. Two hours.
Labor Problems and History of Trades-unionism. Three hours.
History, English, Foreign Language, or Physical Science. Three hours.

*Second Term:*

Transportation. Three hours.
Accounting. Two hours.
Social and Economic Statistics. Two hours.
European History of the Nineteenth Century. Three hours.
Foreign Language, or English. Two hours.
Administration of Charitable and Penal Institutions (Social Path. Con.) Three hours.

**Course in Banking.**

JUNIOR YEAR.

*First Term:*

American Jurisprudence and Elementary Law, or Contracts. Five hours.
Money and Credit. Two hours.
History of Commerce and Commercial Geography. Three hours.
Foreign Language, or English. Two or three hours.
Mathematics, or Physical Science. Three or two hours.

*Second Term:*

Banking. Two hours.
Financial History of the United States. Three hours.
Constitutional Law. Three hours.
International Law. Two hours.
English, or Foreign Language. Two or three hours.
Physical Science, or Mathematics. Three or two hours.

SENIOR YEAR.

*First Term:*

Public Finance. Three hours.
Corporate Finance. Two hours.
Transportation. Two hours.
Labor Problems and History of Trades-unionism. Three hours.
Presidential Administrations. Five hours.

*Second Term:*

Economic Resources and Activities of European Countries. Two hours.
Transportation. Three hours.
Accounting. Two hours.
European History of the Nineteenth Century. Three hours.
Presidential Administrations. Five hours.

**Course in Insurance.**

JUNIOR YEAR.

*First Term:*

American Jurisprudence and Elementary Law, or Contracts. Five hours.
Money and Credit. Two hours.
Foreign Language, or English. Two or three hours.
Physical or Biological Science. Three or two hours.
Mathematics. Three hours.

*Second Term:*

Banking. Two hours.
Financial History of the United States. Three hours.
Physical or Biological Science. Two or three hours.
English, or Foreign Language. Two hours.
Mathematics. Three or two hours.
Building Materials. Three hours.

SENIOR YEAR.

*First Term:*

Law of Insurance and Agency. Five hours.
Public Finance. Three hours.
Corporate Finance. Two hours.
History of Commerce and Commercial Geography. Three hours.
Transportation. Two hours.

*Second Term:*

Transportation. Three hours.
Insurance. Three hours.
Accounting. Two hours.
Social and Economic Statistics. Two hours.
Economic Resources and Activities of European Countries. Two hours.
English, or Foreign Language. Three hours.

### Course in Journalism.

The design of this course is to give a working understanding of the duties of the newspaper office, with drill in the actual preparation of "copy" for the press and the editing of the same. In the newspaper-writing section the various departments of the paper are taken up, discussed both by the instructors and by newspaper men from outside papers, and actual writing is required to show familiarity with the principles of journalism. The local papers and the University papers are furnished with news matter, and actual practice is thus secured. The Senior year includes also editorial work in the revising and editing of "copy" prepared by beginners. The duties of every editorial department of a newspaper are practiced in class and in exercises on which careful preparation is required. Assignments to work on the local papers are on occasion filled by members of the Senior class who show proficiency. Frequent lectures by editors and newspaper writers assist materially in giving a clear understanding of the needs of the profession.

JUNIOR YEAR.

*First Term:*

American Colonial History. Five hours.
Elements of American Jurisprudence (*a*). Two and one-half hours.
Elementary Law (*b*). Two and one-half hours.
Advanced English Composition. Two or three hours.
Ethics, Economic History of England, or English or other Literature. Two or three hours.

*Second Term:*

Constitutional Law. Three hours.
International Law. Two hours.
English or other Literature. Three or two hours.
Advanced English Composition. Two or three hours.
Economic History of the United States. Three hours.
Ethics, Banking, or Economic Resources and Activities of European Countries. Two hours.

SENIOR YEAR.

*First Term:*

Newspaper Writing. Three hours.
English Literature. Two hours.
American History. Five hours.
Elements of Sociology, or Public Finance. Three hours.
Social Pathology, or Corporate Finance. Two hours.

*Second Term:*

Newspaper Writing. Two hours.
English Literature. Three hours.
American History. Five hours.
Social Pathology (continued), or Financial History of United States. Three hours.
Social and Economic Statistics, or Elements of Sociology (con.) Two hours.

### Public Lectures, 1905-'06.

#### Course in Newspaper Writing.

SEPTEMBER 18, 1905. C. M. Harger, "Newspaper English."

OCTOBER 16. C. M. Harger, "Local News."

OCTOBER 20. Clarence Hall, Lawrence *Journal*, "Getting Local News."

NOVEMBER 10. J. L. Brady, Lawrence *World*, "Putting Life into a News Story."

NOVEMBER 13. C. M. Harger, "Telegraph News."

NOVEMBER 27. Oliver Laing, Kansas City *Star*, "The Telegraph Editor."

DECEMBER 8. F. L. Vandegrift, "Getting the News."

DECEMBER 11. C. M. Harger, "Correspondence."

DECEMBER 15. Dell Keizer, Topeka *Herald*, "Accuracy in Newspaper Work."

DECEMBER 18. Prof. W. A. McKeever, "Psychology of Journalism."

JANUARY 12, 1906. C. S. Finch, Lawrence *Gazette*, "Editorial Writing."

JANUARY 15. C. M. Harger, "Editorial Writing."

JANUARY 19. J. E. Junkin, Sterling *Bulletin*, "Local News."

JANUARY 29. J. F. Jarrell, Holton *Signal*, "The City Editor."

FEBRUARY 12. C. M. Harger, "Department Editing."

FEBRUARY 13. Prof. C. S. Skilton, "Musical Criticism."

FEBRUARY 16. T. A. McNeal, *Mail and Breeze*, "Cheery Side of Journalism."

FEBRUARY 20. C. L. Edson, Kansas City *Star*, "Lighter Side of Newspaper Work."

FEBRUARY 23. C. H. Matson, *State Journal*, "The Special Article."

FEBRUARY 27. Prof. E. G. Frazier, "Dramatic Criticism."

MARCH 2. Albert T. Reid, Leavenworth *Post*, "The Newspaper Artist."

MARCH 19 and 21. L. N. Flint, "Advertising."

APRIL 6. Gomer T. Davies, Concordia *Kansan*, "The Country Weekly."

APRIL 13. Ewing Herbert, *Brown County World*, "Things that Interest People."

## Courses in Domestic Science.

The University offers for next year a few courses in domestic science. These courses are of strictly University grade, and, if experience warrants, will be added to as time goes on until a fully formulated course results. The work is organized within the College and the courses given are on the same plane as other elective courses. Students electing such work must conform to all requirements for entrance to the Freshman class of the College, and must do all the required work of the Freshman and Sophomore years. The work in the main is open to Juniors and Seniors only.

The following courses will be offered for the year 1906–'07:

HOUSEHOLD ARCHITECTURE. To include, among other things, sanitation, ventilation, decoration, etc., together with lectures upon trees, plants, and grounds. One term.

PHYSIOLOGY AND HYGIENE. To include, among other things, simple applied therapeutics, treatment of accidents, the principles of nursing, etc. One term.

SOCIOLOGICAL AND HISTORICAL STUDY OF THE FAMILY. One-half term.

BACTERIOLOGY. To include a treatment of the more important bacteria of food and water, and the prevention of the spread of infectious diseases. One-half term.

PHYSICAL EDUCATION, THEORY AND PRACTICE. To include, among other things, the physiology of childhood and the physical education of children.

CHEMISTRY AND PHYSIOLOGY OF FOODS. To include, among other things, dietetics, balanced rations, standard supplies, and full laboratory work. One term.

# III. The School of Engineering.

## Faculty.

FRANK STRONG, Ph. D., President.

FRANK O. MARVIN, A. M., Dean. Professor of Civil Engineering.

EPHRAIM MILLER, Ph. D., Professor of Mathematics and Astronomy.

WILLIAM H. CARRUTH, Ph. D., Professor of Germanic Languages.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry and Metallurgy.

LUCIEN I. BLAKE,* Ph. D., Professor of Physics and Electrical Engineering.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

ERASMUS HAWORTH, Ph. D., Professor of Physical Geology and Mineralogy.

EUGÉNIE GALLOO, A. M., Professor of Romance Languages and Literatures.

HENRY B. NEWSON, Ph. D., Professor of Mathematics.

BRUCE V. HILL, Ph. D., Acting Professor of Physics and Electrical Engineering.

ELMER F. ENGEL, A. M., Associate Professor of German.

PERLEY F. WALKER, M. M. E., Associate Professor of Mechanical Engineering.

HAMILTON P. CADY, Ph. D., Associate Professor of Chemistry.

FRANK E. WARD, Superintendent of Fowler Shops.

MARTIN E. RICE, M. S., Secretary. Assistant Professor of Physics and Electrical Engineering.

WILLIAM C. HOAD, B. S., Assistant Professor of Civil Engineering.

ALMA LE DUC, Ph. B., Assistant Professor of French.

ALBERTA L. CORBIN, Ph. D., Assistant Professor of German.

JOHN N. VAN DER VRIES, Ph. D., Assistant Professor of Mathematics.

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*Absent on leave during year 1905–'06.

FREDERIC N. RAYMOND,* A. M., Assistant Professor of English.

MARGARET LYNN, A. M., Assistant Professor of English.

RICHARD M. FREEMAN, E. E., Assistant Professor of Electrical Engineering.

FRANK E. BRYANT,* A. M., Assistant Professor of English.

GEORGE J. HOOD, B. S., Assistant Professor of Mechanical Drawing.

RALPH E. BASSETT, A. M., Assistant Professor of Spanish.

DAVID F. MCFARLAND, A. M., Assistant Professor of Chemistry.

CHARLES H. ASHTON, A. M., Assistant Professor of Mathematics.

GEORGE F. KAY, A. M., Assistant Professor of Mineralogy.

ROBERT W. CURTIS, Ph. D., Assistant Professor of Chemistry.

ALBERT K. HUBBARD, Ph. B., Assistant Professor of Civil Engineering.

CHARLES I. CORP, B. S., Assistant Professor of Mechanical Engineering.

EDWIN F. STIMPSON, B. S., Assistant Professor of Physics.

HERBERT A. RICE, C. E., Assistant Professor of Civil Engineering.

NED J. WHEELER, B. S., Assistant Professor of Mechanical Drawing.

CHARLES H. GRAY, Ph. D., Assistant Professor of English.

HERBERT H. VAUGHN, A. B., Assistant Professor of French and Spanish.

LAWRENCE C. HODSON, E. M., Assistant Professor of Mining.

LOUIS E. SISSON, A. B., Assistant Professor of English.

HENRY O. KRUSE, A. M. Assistant Professor of German.

FRANCIS W. BUSHONG, S. D., Assistant Professor of Chemistry.

ELISE NEUENSCHWANDER, A. B., Assistant Professor of French.

GEORGE W. HANSON, Forge and Foundry Instructor.

FRANK E. JONES, Instructor in Pattern-making.

LULU GARDNER, A. B., Instructor in English.

JAMES A. G. SHIRK, A. B., Instructor in Mathematics.

RALPH W. BAHNER, A. M., Instructor in German.

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*Absent on leave during year 1905–'06.

## Purpose of the School.

The School of Engineering is the scientific or technical school of the University. It offers what is, in the main, technical training in the various departments of engineering—civil, electrical, mechanical, mining, and chemical. The course of study in each of these branches of engineering is designed first of all to furnish a broad and thorough training in mathematics, mechanics, drawing, and physical science, the fundamental subjects on which the more professional subjects are based. The five courses are nearly identical up to the end of the Sophomore year, but differ considerably thereafter, each emphasizing the subjects peculiar to itself and giving as much technical training as is consistent with the thorough inculcation of sound theory.

## Degrees.

All courses in the School of Engineering lead to the degree of bachelor of science.

All work for higher degrees is under the supervision of the Faculty of the Graduate School. For the regulations governing the granting of advanced degrees, see announcements under the head of "Graduate School," and for the work open to graduate students, see "Courses of Instruction," as given in the catalogue of the College.

## Admission.

There are two methods of admission to the School of Engineering of the University: First, by examination; second, by certificate.

### 1. By Examination.

Times and place of examination for admission to the School of Engineering are the same as for admission to the College. Candidates may divide the examination between two years, as noted.

### 2. By Certificate.

Nearly all students enter the School of Engineering by certificate from high schools, academies, preparatory schools of other colleges and universities, or from military schools, accredited by the University. The candidate for admission by certificate must present either a certificate or other credential, as noted in connection with admission to the College. The same rules apply in regard

to admission by certificate to the School of Engineering as apply for admission to the College.

### Deficiencies and Units of Admission.

The candidate may be admitted to the Freshman class although deficient in some of the requirements as laid down below, provided such deficiency does not exceed three units, and that not more than one unit be in any one required subject. All deficiencies must be made good within such time as may be fixed in each individual case by the Dean of the School of Engineering.

Applicants for admission are advised to come without deficiencies, and to be especially well prepared in algebra and geometry.

An entrance unit represents five periods a week, of not less than forty minutes each, for thirty-five weeks. A unit in the School of Engineering represents five periods a week for a half-year. In making up deficiencies in University classes, one School of Engineering unit is counted as equivalent to one entrance unit.

### Subjects for Admission.

Fifteen units are required for admission.

| REQUIRED. | | OPTIONAL. | |
|---|---|---|---|
| Mathematics 1, 2, 3, algebra and plane and solid geometry | 3 units. | Latin 1, 2, 3, | 3 units. |
| English 1, 2, 3 | 3 " | German 1, 2, 3, | 3 " |
| Physics | 1 " | French 1, 2, 3, | 3 " |
| Free-hand drawing | 1 " | Greek and Rom. Hist. | 1 " |
| Foreign language—may be French or German or Latin; 3 units of one, or 2 units of any one and 1 unit of any other, | 3 " | English history | 1 " |
| | | American history | 1 " |
| | | Chemistry | 1 " |
| | | Higher algebra and plane trigonometry | 1 " |
| | | Physical geography | 1 " |
| | | Botany | 1 " |
| | | Zoology | 1 " |
| | | Economics | 1 " |
| | | Manual training | 1 " |
| Required, | 11 units. | | |
| Optional, | 4 " | | |
| Total, | 15 units. | | |

Four units must be chosen from the optional list.

### College Credit.

College credit for work in preparatory schools will be given upon examination only. For times and place of such examination, see the College catalogue.

### Accredited Schools.

The list of schools accredited to the School of Engineering is practically the same as that of schools accredited to the College.

### Admission to Advanced Studies.

For any advanced rank, the applicant must have completed all of the studies of the course below the rank for which he applies, including the entrance requirements, or their substantial equivalent, as determined by the committee on advanced standing. Applications for credits in single subjects will also be passed upon by this committee, in connection with the Dean of the Engineering School.

### Special Students.

Opportunity is given in the School of Engineering for the admission of persons of mature years who desire to pursue some special line of work, without following any prescribed course or becoming candidates for a degree.

The admission of such special students is directly under the control of the Dean of the School of Engineering, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for standing as special students must present satisfactory evidence of proper preparation for the studies desired and must also meet other requirements as fixed by the Faculty.

Special students are subject to the same regulations as regular students with regard to the quality of work performed and attendance at recitations and examinations, but not as to number of studies to be pursued.

### Registration and Enrolment.

All candidates for admission to the School of Engineering having high-school certificates, and all students intending to pursue their studies in the ensuing year, must present themselves for registration at the University on September 12 to 15, inclusive, 1906. Registration at a later date will be permitted only on the presentation of a satisfactory reason for the delay.

The Dean of the School of Engineering is charged with the execution of all University and Faculty rules relating to the enrolment of students in classes and their choice of studies.

Upon registration, each student will receive from the Registrar a certificate of his standing, which he will present to the Dean of the school, who is charged with the duty of enrolment of students in classes, the selection and arrangement of subjects, and the assignment of hours.

At least two weeks before the close of any term, each student then in attendance must present his application for enrolment for the term following to the Dean, whose approval of the work selected is a necessary condition for admission to classes.

### Inadequate Preparation.

When students show by their current work insufficient entrance preparation in any study, they may be required to make good such deficiency in any manner prescribed by their instructors.

### Grades and Failures.

Examinations are held at regular stated periods and at such other times as may be provided for by the regulations of the Faculty. At the close of each term, a summary of the student's work is reported to the Registrar, for entry upon the general record. At the end of each half-year, the parent or guardian of each student will be furnished, on request, a copy of the entries relating to that student.

Absence from examination or failure in more than one-third of his work, in any one term, severs a student's connection with the University, which can only be renewed through the consent of the Dean of the school.

## Expenses.

By legislative enactment, each student from the state of Kansas in the School of Engineering must pay a matriculation fee of five dollars (paid but once, on entrance), and a yearly incidental fee of ten dollars. Non-residents of Kansas must pay a matriculation fee of ten dollars, and an incidental fee of twenty dollars.

**Shop and Laboratory Supplies.** All the laboratories of the University and their equipment of power, engines, machinery, light, desks, tables, balances, microscopes, models and complete apparatus are at the disposal of the students, under the direction of their instructors. These desks, benches and tables will be further provided with individual sets of tools, sets of working apparatus, and equipment, for which the student will be held responsible and expected to return in good condition. Students are requested to check these up at time of entering a laboratory course to see that they get all that are charged to them. At the end of the course, or at the discretion of the instructor, all the individual equipment in good order must be returned. Such as may have been lost, damaged, broken or destroyed by the student must be paid for by him at that time. Material of every kind consumed, ground up or

used in the manifold experiments and practices in the laboratories must be paid for by the student. Students providing themselves with the exact change may obtain this of the storekeepers in any quantity at the various department storerooms at its cost. For the economic and prompt supply of such material, coupon books, good in all departments, are furnished at the business office, in the amounts of five dollars and two dollars. Any coupons unused are redeemable in cash at the Secretary's office at the end of the course.

**Summer Field-work.** No fee will be charged for the use of instruments in summer field-work. Each student will be charged the actual cost of living, and incidental expenses.

**Other Expenses.** There are no dormitories connected with the University. Students find accommodations in the boarding-houses and homes of Lawrence. Information concerning the location of rooming- and boarding-places may be had at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at $4 a week. Some persons who furnish plain rooms and good, plain food receive boarders at $3 a week. Day board in private families and at city restaurants may be obtained for $2.75 to $4 a week. Day board in clubs varies from $2.50 to $3 a week. Furnished rooms, usually occupied by two students, range from $4 to $15 a month. Unfurnished rooms rent for $1.50 to $3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can attend the University for very little cost in money.

The following table shows the estimated expenses of a student of the University for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends upon the tastes and habits of the student:

| | *Low.* | *Average.* |
|---|---|---|
| Board | $100 00 | $120 00 |
| Room | 20 00 | 40 00 |
| Books and stationery | 8 00 | 15 00 |
| Laundry | 8 00 | 20 00 |
| Matriculation and other fees | 15 00 | 15 00 |
| Incidentals | 15 00 | 50 00 |
| Totals | $166 00 | $260 00 |

**Self-help.** Many students find work in private families, in offices, and in various occupations, by means of which they defray a portion of their expenses. Some students have earned their entire expenses while in attendance, and have made good records at the same time; other students have done so much work that they have

not been able to keep up their studies, and have thus missed the one thing for which they came. If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. The University cannot guarantee work to any student, but will lend every possible assistance in finding employment. The University Christian Associations maintain employment bureaus, where the names of those seeking work and of those desiring workers are recorded. Students desiring to help themselves are advised to apply early to the University Y. M. C. A. or to the Registrar, University of Kansas, Lawrence.

## Courses of Study.

**Leading to the Degree of Bachelor of Science.**

The courses of study in the School of Engineering are almost entirely required. The work is in the main technical, and requires preparation of a high order, especially in mathematics. It also requires exhaustive effort in the courses themselves, which call for the entire time of the student to do it satisfactorily.

The work of the Freshman year is common to all students of the School of Engineering, so that a choice between the several lines of engineering need not be made until after a year's experience with college life. As a further aid in making an intelligent choice, the general aims of the several courses are here briefly stated.

**Civil Engineering.** The first aim is to impart as broad a scientific training as the length of the course and the essential professional studies will allow, so that as many avenues to successful service as possible may be open to the graduate. Along professional lines, emphasis is laid first on work in surveying and field methods, as these are of special value to young engineers; second, on mechanics and its applications to the designs of roofs and bridges and other structures; third, on railway location and construction; fourth, on hydraulics and its applications to irrigation and canal work; fifth, on sanitary and municipal engineering, including water-supply, sewerage, and roads and pavements. Stress is placed on the study of principles, as being the things not likely to be acquired in after-life.

**Electrical Engineering.** The course in electrical engineering is designed to train the student in those fundamental principles of applied mathematics, chemistry, mechanics and electricity which form the basis of all successful specialization. The laboratory and shop work is arranged to develop and to encourage individual skill and ingenuity. Such experience in practical work as is possible is also included. The thesis work involves original investigation.

**Mechanical Engineering.** This course offers thorough preparation in the scientific subjects in which the engineer must be trained who is to devote himself to questions involved in the designing, manufacturing and operating of machinery of every description, and in the filling of executive positions in manufacturing industries.

The function of the work of the mechanical engineering department is twofold: To offer to the students of the other engineering courses such lines of work as their particular needs require, and to afford students of the University an opportunity to specialize in the direction of the purely mechanical side of engineering. Especial stress is laid upon the designing of machinery and the preparation of the necessary working-drawings, a familiarity with the operations involved in the construction of engines, boilers, machinery, and mechanical appliances of all kinds.

**Mining Engineering.** The object of the course in mining is to qualify students for future work in prospecting, mining, milling, and smelting, in accordance with modern scientific principles. In adopting the course of study, it was endeavored to include a sufficient requirement in language work to give the student a good knowledge of English, French, and German, and to adjust the various essential subjects—mathematics, engineering, chemistry, metallurgy, mining, mineralogy, and geology—so that upon the completion of the course one may be well qualified for specializing along any line which his future life may make desirable.

**Chemical Engineering.** This course affords students an opportunity to specialize in chemistry, and to fit themselves for positions as chemists, managers or superintendents of manufacturing plsnts where the work is based on chemical science. This would include such industries as that of iron, zinc, gold and silver smelting and refining, the making of fertilizers, clay-working, sugar-refining, dyeing, bleaching, gas-making, cement-making, and general chemical manufacture. This course is broad enough for general training, and may be made special enough for technical work.

## Work in Common.

FRESHMAN YEAR.

All students of the School of Engineering have work in common during the Freshman year, the differentiation between courses occurring in the Sophomore year. In the statement of courses below, following each subject is stated the number of hours per week of class exercise given to it; (*a*) and (*b*) signify first and second half-terms.

The modern foreign language chosen must be carried throughout the year, five hours each term.

The grade of the courses will depend on the amount and kind of language offered for entrance.

*First Term:*

English 1, three hours, 8, 9, 11:15, 3:30, or 4:30. Assistant Professor Lynn and Assistant Professor Sisson and assistants.

Elementary Mechanics, two hours, at 8, 9, 11:15, 3:30, or 4:30. Assistant Professor Hood and Assistant Professor Wheeler and assistants.

French, German, or Spanish, five hours.

College Algebra (Mathematics 2), three hours, Monday, Wednesday, and Friday, at 8, 9, 10, 11:15, or 3:30.

Plane Trigonometry (Mathematics 3), two hours, Tuesday and Thursday, at 8, 9, 10, 11:15, or 3:30.

Free-hand Drawing (Mechanical Drawing 1), six hours for first six weeks of term—Monday, Wednesday, and Friday, from 8 to 10, from 10:15 to 21:15, from 3:30 to 5:30; Tuesday and Thursday, from 1:30 to 3:30, and Saturday, from 8 to 10; or Tuesday and Thurday, from 3:30 to 5:30, and Saturday, from 10 to 12. Assistant Professors Hood and Wheeler and assistants.

Geometrical Drawing (Mechanical Drawing 2), six hours for last fourteen weeks of term. Same days and hours as for free-hand drawing. Assistant Professors Hood and Wheeler and assistants.

Shop Work 1 or 2, five hours. Mr. Hanson and Mr. Jones.

*Second Term:*

French, German, or Spanish, five hours.

Analytical Geometry I (Mathematics 4), two hours, Tuesday and Thursday, at 8, 9, 10:15, 2:30, or 3:30.

Calculus I (Mathematics 5), three hours, Monday, Wednesday, and Friday, at 8, 9, 10:15, 2:30, or 3:30.

Descriptive Geometry (Mechanical Drawing 3), three hours, Monday, Wednesday, and Friday, at 8, 9, 11:15, 3:30, or 4:30. Assistant Professors Hood and Wheeler and assistants.

English 2, two hours, at 8, 9, 11:15, 3:30, or 4:30. Assistant Professors Lynn and Sisson and assistants.

Projection Drawing (Mechanical Drawing 4), six hours, Monday, Wednesday, and Friday, from 8 to 10, from 10:15 to 12:15, or from 1:30 to 3:30; Tuesday and Thursday, from 1:30 to 3:30, and Saturday, from 8 to 10; or Tuesday and Thursday, from 3:30 to 5:30, and Saturday, from 10 to 12. Assistant Professors Hood and Wheeler and assistants.

Shop Work 1 or 2, five hours. Mr. Hanson and Mr. Jones.

For irregular students, classes in English, algebra and trigonometry, French 1 and German 1 and 3 are given in the second term, and classes in analytical and descriptive geometry, French 2 and German 2 are given in the first term.

## Civil Engineering.

SOPHOMORE YEAR.

*First Term:*

Physics 7, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Assistant Professor Stimpson.

Chemistry 3, lectures three hours and laboratory four hours, 8 to 10. Associate Professor Cady, Assistant Professor McFarland, and Mr. Faragher.

Calculus II (Mathematics 7), three hours, Monday, Wednesday, and Friday, at 10:15 or 1:30.

Analytical Geometry II (Mathematics 6), two hours, Tuesday and Thursday, at 10:15 or 1:30.

Shades, Shadows, and Perspective (Mechanical Drawing 5), six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hubbard.

Shop Work 3, five hours, 1 to 6. Mr. Ward.

One technical report.

*Second Term:*

Physics 8, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Assistant Professor Stimpson.

Surveying (Civil Engineering 5), five hours, at 10:15 or 11:15, and field-work five hours. Assistant Professors Hoad and Hubbard.

Qualitative Analysis (Chemistry 4), lectures two hours and laboratory six hours, 8 to 10. Associate Professor Cady and Mr. Faragher.

Topographical Drawing (Civil Engineering 1), six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hubbard.

Shop Work 4, five hours, 1 to 6. Mr. Ward.

One technical report.

*Summer Vacation:*

Surveying (Civil Engineering 6). Assistant Professors Hoad and Hubbard.

JUNIOR YEAR.

*First Term:*

Mechanics 1, five hours, at 8 and 9. Assistant Professor H. A. Rice.

Advanced English Composition (English 3), four hours, Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Assistant Professors Raymond and Gray.

Geology 1, five hours, at 11:15. Professor Haworth.

Railway Surveying (Civil Engineering 11), five hours, at 10:15, and field-work, five hours. Assistant Professors Hoad and Hubbard.

Railway Drawing (Civil Engineering 2), six hours, Tuesday and and Friday, 1:30 to 4:30. Assistant Professor Hoad.

*Second Term:*

Strength of Materials (Mechanics 2), four hours, at 8 or 10:15. Assistant Professor H. A. Rice.

Engines and Boilers (Mechanical Engineering 7), five hours, at 11:15. Assistant Professor Corp.

Location of Railways (Civil Engineering 10), three hours, Monday, Wednesday, and Friday, at 9. Assistant Professor Hoad.

Roads and Pavements (Civil Engineering 9), two hours, Tuesday and Thursday, at 9. Assistant Professor Hoad.

Graphical Statics (Civil Engineering 3), six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hoad.

Testing Laboratory (Mechanics 3), four hours, Monday, Tuesday, Thursday, or Friday, 1:30 to 5:30, or Saturday, 8 to 12. Assistant Professors Hood and Corp.

One technical report.

*Summer Vacation:*

Surveying (Civil Engineering 4). Assistant Professors Hoad and Hubbard.

SENIOR YEAR.

*First Term:*

Hydraulics (Mechanics 4), (*a*), four hours, at 10:15. Assistant Professor Hubbard.

Hydraulic Machinery (Mechanical Engineering 10), (*b*), four hours, at 10:15. Associate Professor Walker.

Hydraulic Laboratory (Mechanics 5), two hours, Tuesday, Thursday, or Friday, 3:30 to 5:30. Assistant Professor Hood.

Roofs and Bridges (Civil Engineering 14), ten hours, 1:30 to 3:30. Assistant Professor H. A. Rice.

Sewerage (Civil Engineering 12), (*a*), five hours, at 11:15. Assistant Professor Hoad.

Water-supply (Civil Engineering 13), (*b*), five hours, at 11:15. Assistant Professor Hoad.

Masonry (Civil Engineering 8), (*b*), five hours, at 9. Assistant Professor Hubbard.

One technical report.

*Second Term:*

Bridge Designing (Civil Engineering 15), ten hours, 1:30 to 3:30. Assistant Professor H. A. Rice.

Contracts and Specifications (Civil Engineering 4), (*b*), five hours, at 11:15. Professor Marvin.

Cement Laboratory (Civil Engineering 7), four hours, Monday and Thursday, 3:30 to 5:30. Assistant Professor Hubbard.

One full term's work chosen from engineering, mathematical or science subjects not required in course.

Thesis.

## Electrical Engineering.

SOPHOMORE YEAR.

*First Term:*

Physics 7, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Assistant Professor Stimpson.

Calculus II (Mathematics 7), three hours, Monday, Wednesday, and Friday, at 10:15 or 1:30.

Analytical Geometry II (Mathematics 6), two hours, Tuesday and Thursday, at 10:15 or 1:30.

Chemistry 3, lectures three hours and laboratory four hours, 8 to 10. Associate Professor Cady, Assistant Professor McFarland, and Mr. Faragher.

Machine Drawing (Mechanical Drawing 6), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professors Hood and Wheeler.

Shop Work 3, five hours, 1 to 6. Mr. Ward.

One technical report.

*Second Term:*

Qualitative Analysis (Chemistry 4), lectures two hours and laboratory six hours, 8 to 10. Associate Professor Cady and Mr. Faragher.

Physics 8, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Assistant Professor Stimpson.

Steam-engines and Boilers (Mechanical Engineering 6), five hours, at 10:15. Mr. Ward.

Graphical Statics of Roofs and Mechanism (Mechanical Engineering 1), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professors Hood and Wheeler.

Shop Work 4, five hours, 1 to 6. Mr. Ward.

One technical report.

JUNIOR YEAR.

*First Term:*

Analytical Mechanics (Mechanics 1), five hours, at 8 and 9. Assistant Professor H. A. Rice.

Theory of Electricity and Magnetism (Electrical Engineering 1), five hours, at 10:15. Professor Blake.

Thermodynamics (Mechanical Engineering 11), four hours, at 11:15. Associate Professor Walker.

Advanced English Composition (English 3), four hours, Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Assistant Professors Raymond and Gray.

Electrical Laboratory (Electrical Engineering 6), six hours, 2:30 to 5:30. Assistant Professor M. E. Rice.

Shop Work 5, five hours, 1 to 6. Mr. Ward.

*Second Term:*

Dynamo Machinery (Electrical Engineering 3), three hours, Monday, Wednesday, and Friday, at 11:15. Assistant Professor M. E. Rice.

Mechanics of Machinery (Mechanical Engineering 19), three hours, Monday, Wednesday, and Friday, at 8. Associate Professor Walker.

Theory of Alternating Currents (Electrical Engineering 2), five hours, at 9. Professor Blake.

Electrical Laboratory (Electrical Engineering 7), four hours, 1:30 to 5:30. Assistant Professor M. E. Rice.

Strength of Materials (Mechanics 2), four hours, at 8 or 10:15. Assistant Professor H. A. Rice.

Testing Laboratory (Mechanics 3), Monday, Tuesday, Thursday, or Friday, 1:30 to 5:30, or Saturday, 8 to 12. Assistant Professors Hood and Corp.

Shop Work 6, five hours, 1 to 6. Mr. Ward.

One technical report.

SENIOR YEAR.

*First Term:*

Dynamo Machinery (Electrical Engineering 4), five hours, at 11:15. Assistant Professor Freeman.

Physical Chemistry (Chemistry 23), five hours, at 10:15. Associate Professor Cady.

Dynamo Design (Electrical Engineering 5), three hours, Monday, Wednesday, and Friday, 8 to 10. Assistant Professor Freeman.

Machine Design (Mechanical Engineering 4), eight hours, Tuesday and Thursday, 1:30 to 5:30. Associate Professor Walker.

Electrical Laboratory (Electrical Engineering 8), six hours, 2:30 to 5:30. Assistant Professor Freeman.

Engineering Laboratory (Mechanical Engineering 14), four hours, Tuesday or Thursday, 1:30 to 5:30. Associate Professor Walker and Assistant Professor Corp.

Electrical Society, once a week.

One technical report.

*Second Term:*

Specifications and Contracts (Civil Engineering 4), (*b*), five hours, at 11:15. Professor Marvin.

Professional Thesis (Electrical Engineering 13), six hours, 2:30 to 5:30. Assistant Professor Freeman.

Two and one-half terms' work to be chosen from any engineering or mathematical courses offered, subject to the approval of the department of electrical engineering. See especially courses 9, 10 and 11 in electrical engineering.

## Mechanical Engineering.

SOPHOMORE YEAR.

*First Term:*

Physics 7, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Assistant Professor Stimpson.

Calculus II (Mathematics 7), three hours, Monday, Wednesday, and Friday, at 10:15 or 1:30.

Analytical Geometry II (Mathematics 6), two hours, Tuesday and Thursday, at 10:15 or 1:30.

Chemistry 3, lectures three hours and laboratory four hours, 8 to 10. Associate Professor Cady, Assistant Professor McFarland, and Mr. Faragher.

Machine Drawing (Mechanical Drawing 6), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professors Hood and Wheeler.

Shop Work 3, five hours, 1 to 6. Mr. Ward.

One technical report.

*Second Term:*

Physics 8, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Mr. Stimpson.

Qualitative Analysis (Chemistry 4), lectures two hours and laboratory six hours, 8 to 10. Associate Professor Cady and Mr. Faragher.

Steam-engines and Boilers (Mechanical Engineering 6), five hours, at 10:15. Mr. Ward.

Graphical Statics of Roofs and Mechanism (Mechanical Engineering 1), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professors Hood and Wheeler.
Shop Work 4, five hours, 1 to 6. Mr. Ward.
One technical report.

JUNIOR YEAR.

*First Term:*

Analytical Mechanics (Mechanics 1), five hours, at 8 or 9. Assistant Professor H. A. Rice.
Dynamo Machinery (Electrical Engineering 14), five hours at 10:15. Assistant Professor M. E. Rice.
Metallurgy 1 (Chemistry 21), five hours, at 11:15. Assistant Professor McFarland.
Electrical Laboratory (Electrical Engineering 6), three hours, 2:30 to 5:30. Assistant Professor M. E. Rice.
Engineering Laboratory (Mechanical Engineering 14), four hours, Tuesday or Thursday, 1:30 to 5:30. Assistant Professor Corp.
Shop Work 5, five hours, 1 to 6. Mr. Ward.
Mechanical Engineering Society, once a week.

*Second Term:*

Strength of Materials (Mechanics 2), four hours, at 8 or 10:15. Assistant Professor H. A. Rice.
Mechanics of Machinery (Mechanical Engineering 2), three hours, Monday, Wednesday, and Friday, at 9. Associate Professor Walker.
Kinematics (Mechanical Engineering 3), six hours, Tuesday and Thursday, 1:30 to 4:30. Assistant Professor Corp.
Electric Light and Power Transmission (Electrical Engineering 12), five hours, at 8. Assistant Professor Freeman.
Testing Laboratory (Mechanics 3), four hours, Monday, Tuesday, Thursday, or Friday, 1:30 to 5:30, or Saturday, 8 to 12. Assistant Professors Hood and Corp.
Shop Work 6, five hours, 1 to 6. Mr. Ward.
Mechanical Engineering Society, once a week.
One technical report.
Summer Vacation Work (Mechanical Engineering 17). This course to be done before graduation.

SENIOR YEAR.

*First Term:*

Advanced English Composition (English 3), four hours, Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Assistant Professors Raymond and Gray.

Mechanics of Fluids (Mechanics 4), (*a*), four hours, at 10:15. Assistant Professor Hubbard.

Hydraulic Machinery (Mechanical Engineering 10), (*b*), four hours, at 10:15. Associate Professor Walker.

Hydraulic Laboratory (Mechanics 5), Tuesday, Thursday, or Friday, 3:30 to 5:30. Assistant Professor Hood.

Thermodynamics (Mechanical Engineering 11), four hours, at 11:15. Associate Professor Walker.

Machine Design (Mechanical Engineering 4), six hours, Monday and Wednesday, 2:30 to 5:30. Associate Professor Walker.

General Machine Design (Mechanical Engineering 8), three hours, Monday, Wednesday, and Friday, at 9. Assistant Professor Corp.

Thesis Work (Mechanical Engineering 15), two hours, Friday, 1:30 to 3:30.

Mechanical Engineering Society, once a week.

One technical report.

*Second Term:*

Specifications and Contracts (Civil Engineering 4), (*b*), five hours, at 11:15. Professor Marvin.

The Gas-engine (Mechanical Engineering 9), two hours, Tuesday and Thursday, at 9. Associate Professor Walker.

Advanced Steam Engineering (Mechanical Engineering 12), three hours, Tuesday, Thursday, and Friday, at 8. Associate Professor Walker.

Engineering Practice (Mechanical Engineering 13), four hours, (*a*), at 11:15. Associate Professor Walker.

Machine Design (Mechanical Engineering 5), eight hours, Tuesday and Thursday, 1:30 to 5:30. Associate Professor Walker.

Engineering Laboratory (Mechanical Engineering 14), four hours, Monday or Wednesday, 1:30 to 5:30. Assistant Professor Corp.

Thesis Work (Mechanical Engineering 13), Friday, 1:30 to 5:30. Associate Professor Walker.

Mechanical Engineering Society, once a week.

## Mining Engineering.

SOPHOMORE YEAR.

*First Term:*

Chemistry 3, lectures three hours and laboratory four hours, 8 to 10. Associate Professor Cady, Assistant Professor McFarland, and Mr. Faragher.

Calculus II (Mathematics 7), three hours, Monday, Wednesday, and Friday, at 10:15 or 1:30.

Analytical Geometry II (Mathematics 6), two hours, Tuesday and Thursday, at 10:15 or 1:30.

Elementary Geology (Geology 1), lectures five hours, at 11:15. Professor Haworth.

Machine Drawing (Mechanical Drawing 6), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professor Hood.

Shop Work 3, five hours, 1 to 6. Mr. Ward.

Mining Journal Meeting, one hour.

One technical report.

*Second Term:*

Qualitative Analysis (Chemistry 4), lectures two hours and laboratory six hours, 8 to 10. Associate Professor Cady and Mr. Faragher.

Surveying (Civil Engineering 5), five hours, at 10:15 or 11:15, and field-work five hours. Assistant Professors Hoad and Hubbard.

Mineralogy (Mineralogy 1), lectures and laboratory work, ten hours, from 3:30 to 5:30. Assistant Professor Kay.

Topographical Drawing (Civil Engineering 1), four hours, Tuesday and Friday, 1:30 to 3:30. Assistant Professor Hubbard.

Mining Journal Meeting, one hour.

One technical report.

*Summer Vacation:*

Surveying (Civil Engineering 6), four weeks. Assistant Professors Hoad and Hubbard.

JUNIOR YEAR.

*First Term:*

Physics 7, lectures 4 hours, at 11:15, and laboratory two hours. Professor Blake and Assistant Professor Stimpson.

Economic Geology (Geology 4), three hours, Monday, Wednesday, and Friday, at 9. Professor Haworth.

Mining 2, two hours, Tuesday and Thursday, at 9. Assistant Professor Hodson.

Mining 1, five hours, at 8. Assistant Professor Hodson.
Quantitative Analysis (Chemistry 8), lectures and laboratory work, ten hours, 3:30 to 5:30. Professor Bailey and Assistant Professor Curtis.
Shop Work 4, five hours, Saturday, 8 to 1. Mr. Ward.
Mining Journal Meeting, one hour.
One technical report.

*Second Term:*

Physics 8, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Assistant Professor Stimpson.
Assaying and Metallurgical Analysis (Chemistry 16), ten hours, 3:30 to 5:30. Assistant Professor McFarland.
Mining 2, three hours, Monday, Wednesday, and Friday, at 10:15. Assistant Professor Hodson.
Economic Geology (Geology 4), two hours, Tuesday and Thursday, at 10:15. Professor Haworth.
Mining Journal Meeting, one hour.
One technical report.

*Summer Vacation:*

Summer Excursion Work (Mining 8), four weeks. Professor Haworth and Assistant Professor Hodson.

SENIOR YEAR.

*First Term:*

Mining 3, five hours, at 10:15. Assistant Professor Hodson.
Advanced English Composition (English 3), four hours, Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Assistant Professors Raymond and Gray.
Mechanics 1, five hours, at 8 or 9. Assistant Professor H. A. Rice.
Optional: Five hours from any geological, mathematical or engineering subjects not taken in the mining course.
Mining Journal Meeting, one hour.

*Second Term:*

Strength of Materials (Mechanics 2), four hours, at 10:15. Assistant Professor H. A. Rice.
Testing Laboratory (Mechanics 3), Monday, Tuesday, Thursday, or Friday, 1:30 to 5:30, or Saturday, 8 to 12. Assistant Professors Hood and Corp.
Metallurgy 2 (Chemistry 22), five hours, at 10:15. Assistant Professor McFarland.
Mining 4, (*a*), five hours, at 11:15. Assistant Professor Hodson.

Specifications and Contracts (Civil Engineering 4), (*b*), five hours, at 11:15. Professor Marvin.

Professional Thesis. Professor Haworth and Assistant Professor Hodson.

Mining Journal Meeting.

## Chemical Engineering.

SOPHOMORE YEAR.

*First Term:*

Physics 7, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Assistant Professor Stimpson.

Chemistry 3, lectures three hours and laboratory four hours, 8 to 10. Associate Professor Cady, Assistant Professor McFarland, and Mr. Faragher.

Calculus I (Mathematics 7), three hours, Monday, Wednesday, and Friday, at 10:15 or 1:30.

Analytical Geometry I (Mathematics 6), two hours, Tuesday and Thursday, at 10:15 and 1:30.

Machine Drawing (Mechanical Drawing 6), six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professors Hood and Wheeler.

Shop Work 3, five hours, 1 to 6. Mr. Ward.

Chemical Club Meeting, Thursday, at 5.

One technical report.

*Second Term:*

Physics 8, lectures four hours, at 11:15, and laboratory two hours. Professor Blake and Assistant Professor Stimpson.

Qualitative Analysis (Chemistry 4), lectures two hours and laboratory six hours, 8 to 10. Assistant Professor Cady and Mr. Faragher.

Mineralogy (Mineralogy 1), ten hours, 3:30 to 5:30. Assistant Professor Kay.

Shop Work 4, five hours, 1 to 6. Mr. Ward.

Chemical Club Meeting, Thursday, at 5.

One technical report.

JUNIOR YEAR.

*First Term:*

Mechanics 1, five hours, at 8 or 9. Assistant Professor H. A. Rice.

Advanced English Composition (English 3), four hours, Tuesday and Thursday, at 8, with conferences Wednesday and Friday. Assistant Professors Raymond and Gray.

Quantitative Analysis (Chemistry 8), twenty hours, 1:30 to 5:30. Professor Bailey and Assistant Professor Curtis.
Chemical Club Meeting, Thursday, at 5.

*Second Term:*

Strength of Materials (Mechanics 2), four hours, at 8 or 10:15. Assistant Professor H. A. Rice.
Testing Laboratory (Mechanics 3), four hours, Monday, Tuesday, Thursday, or Friday, 1:30 to 5:30, or Saturday, 8 to 12. Assistant Professors Hood and Corp.
Organic Chemistry (Chemistry 17), ten hours, 3:30 to 5:30. Assistant Professor Bushong.
Metallurgy 2, five hours, at 10:15. Assistant Professor McFarland.
Chemical Club Meeting, Thursday, at 5.
One technical report.

SENIOR YEAR.

*First Term:*

Physical Chemistry (Chemistry 23), five hours, at 10:15. Associate Professor Cady.
And two of the following: (1) Mechanics 4, Mechanical Engineering 10, and Mechanics 5. (2) Civil Engineering 12 and 13. (3) Mechanical Engineering 11. (4) Electrical Engineering 14. (5) Mining Engineering 1. (6) Geology 1. (7) Organic Preparations. (8) Technical Chemistry. (9) Metallurgy 1. (10) Mining 2 and Geology 4.
Chemical Club Meeting, Thursday, at 5.
One technical report.

*Second Term:*

Specifications and Contracts (Civil Engineering 4), (*b*), five hours, at 11:15. Professor Marvin.
Chemical Club Meeting, Thursday, at 5.
Assaying and Metallurgical Analysis (Chemistry 16), ten hours, 3:30 to 5:30. Assistant Professor McFarland.
Thesis.
And one of the following: (1) Mining Engineering 2 and Geology 4. (2) Mineralogy 3 and Geology 6, the College. (3) Mechanical Engineering 7. (4) Water Analysis. (5) Sugar Chemistry. (7) Chemistry 23, the College.

## Equipment.

**The Library.** The scientific portion of the University library directly related to engineering contains about 12,000 volumes, while in the reading-room are found 285 American and foreign engineering and scientific journals.

**Engineer's Instruments.** These comprise transits, levels, compasses, solar attachments, rods, chains, tapes, plane tables, heliotropes, current meter, aneroids, and other minor instruments. Among the above are a precise level for very accurate leveling, a secondary triangulation transit for topographical work, and an alt-azimuth instrument for use on primary triangulations, which has a ten-inch circle, read to single seconds of arc.

For the summer work in surveying a complete camping outfit is provided. Planimeters, Thatcher and Manheim slide rules and Colby's stadia slide rules are used for rapid calculation and estimation of quantities.

**Drawing-rooms.** These are well lighted and provided with tables. They are furnished with many photographs of actual constructions and the cases contain large numbers of blue-prints of working-drawings for bridges, railways, sewers, machinery, etc.

## Laboratories.

The School of Engineering is well equipped with apparatus of modern pattern from the best makers.

**Physical Geology and Mining.** The department of physical geology and mining possesses a large collection of minerals and samples of rocks which are of economic value, and the necessary apparatus for their examination and identification.

The ore-dressing laboratory, located in the west basement of the Chemistry Building, contains stamps, jigs, crushers, screens (power and hand), hydraulic classifiers, spitz kasten and spitz lutte, an automatic ore-feeder, a slime table, a pulverizer, besides facilities for panning, vanning and sampling ores. It affords opportunities for practical training in making laboratory and field tests on ores. This work is supplemented by the mining museum, which contains a collection of implements and apparatus used in mining and milling operations, as well as models illustrating methods and processes.

**Civil and Municipal Engineering.** In the testing laboratories

are found an Olsen universal machine of 100,000 pounds capacity, a 50,000-pound torsion machine of the same make, a 50,000-pound transverse machine (which has been built in the Fowler Shops), a Riehle machine of 40,000 pounds capacity, a standard rattler for the testing of paving brick, together with scales, tools and appliances for making accurate tests of all kinds of materials. One room is devoted to the testing of hydraulic cements, and is equipped with an Olsen machine of 2000 pounds capacity, and an automatic shot machine of 1000 pounds capacity, convenient tables and racks, and a fair amount of accessory apparatus. Some machinery has been installed recently for testing the value of various stone for making macadam roads.

The hydraulic laboratory contains a measuring pit, a large steel orifice tank for experimentation with jets, a triplex power pump, a centrifugal pump, pipe-lines, weir-boxes, gages, a Venturi meter with manometer, a Pelton water motor, etc., arranged to illustrate the laws of fluid motion, and affording some opportunity for testing hydraulic machinery.

**Mechanical Engineering.** For mechanical engineering, space is allotted in laboratories in the Fowler Shops for experimental work, including calibration of engineering instruments, some of the minor experiments on steam and dynamometer testing. In one room there are installed complete Westinghouse and New York air-brake equipments, which serve to illustrate the use of the air-brake in train service and to provide a supply of compressed air for experimental purposes and for operating compressed-air-driven tools and appliances. A gasoline-engine is arranged for complete tests, using either gas or gasoline. Arrangements are provided for measuring the fuel, water and air supply, and the heat given to jacket, water, and exhaust. An adjustable fan blower is used as a constant load for testing.

In another room space is provided for steam-engineering work. Here is a special boiler suited to testing purposes. Small engines are used for engine experiments, and pumps, injectors, gages, calorimeters, separators, pyrometers, flue-gas apparatus and other accessories are provided. Arrangements are provided for making tests of various makes of injectors and separators.

The University power-house equipment is also available for boiler and engine tests.

There has recently been fitted up a laboratory for the investigation of oils, their fuel values, and properties as lubricants.

**Electrical Engineering.** The dynamo-laboratory equipment consists of two D. C. Crocker Wheeler 3-horse-power motors, pro-

vided with separate shunt and series field spools, two General Electric double-current generators, 7½ K. W., tapped on the alternating current end for two-phase, three-phase or single-phase current at sixty cycles, a General Electric special laboratory machine, rated 7½ K. W., consisting of a stationary armature, wound six-phase, and provided with a revolving field and three different types of induction motor rotors. There is also a Westinghouse 2-horse-power, three-phase motor, a Fort Wayne self-starting synchronous motor, and a number of small D. C. motors.

The machinery of the laboratory is run from a line shaft by a 15-horse-power Siemens and Halske motor. The laboratory is provided with a good assortment of Weston, Whitney and Thompson volt, ampere and watt meters, and auxiliary apparatus, such as resistances, reactances, transformers, etc.

**Chemical Engineering.** The chemical laboratory contains separate rooms for general chemistry, qualitative analysis, quantitative analysis, physical chemistry, and assaying. There are abundant specimens and samples of chemical products to use for illustration. For physical chemistry, especially, the instruments for electrical measurements are of the newest designs and greatest accuracy. The department also has a liquid-air machine, so that experiments can be carried on at low temperatures. The assay-room is provided with the usual furnaces, muffles, etc., for the complete assay of metallurgical products.

**The Fowler Shops.** This building contains in the boiler-room two Erie City return-flue, 16′ x 66″ high-pressure boilers; also the present equipment of the experimental steam-engineering laboratory described above. Adjoining is the engine-room, in which is a Russell four-valve, medium-speed engine of 150 horse-power, and also a 75-horse-power Ball, high-speed, self-oiling engine. Both these engines are fitted with indicator connections and reducing gears. These two couple conjointly or independently on a short main-line shaft, from which are run the various power and lighting generators. These at present consist of one 1000-volt, 60 K. W., General Electric alternator; one 65 K. W., Siemens and Halske, D. C., 125 volts; one 17½ K. W., General Electric, D. C., 125 volts; one Bullock, 115 K. W., 1000-volt, three-phase, revolving-field light generator, and one T. A. regulator. Some sixteen independent circuits run from a central switch-board to various buildings and laboratories of the University, so that varieties of currents are always available. In the engine-room is also a Cookson feed-water heater and Cochran separators for each engine. Here, also, are installed a duplex 18″ x 12″ x 10″ steam fire-pump, and a 7½″ x 5″ x 8″

steam service pump for the water-supply of the University, and an exhaust-steam-heating equipment for heating the building. The forge-room, 50′ x 40′, contains sixteen Sturtevant down-draft forges, with anvils and all usual smithing tools; there are also provided one large forge and a Little Giant power trip-hammer for heavier work.

The metal-working room, which is 80′x50′, has 160 feet of benches, with twenty vises and usual bench tools. There are, at present, ten 14″x6′ Standard engine-lathes; one 18″x12′ Challenge engine-lathe, with all attachments; one crank shaper; one 25″ Challenge drill-press, with back gear and self-feed; one universal cutter and reamer grinder; one 20″ drill-press, with hand feed; one 1½″ bolt-cutter; one universal milling-machine, with spiral gear-cutter, and vertical and all other attachments—all the above made by the American Tool Works Company, Cincinnati, Ohio. Also, one 26″x26″x7′ Gray planer; one 18″x8′ boring lathe; two 20″ drill-presses, with power feed, and one 2″x24″ Jones and Lawson turret-lathe with chucking attachments. There are also power hack-saws, dry and wet grinders, grindstones, etc., usually found in well-equipped shops. The line shafting is divided independently into three sections by friction-clutch couplings, and is run by a Westinghouse 4-pole, 15-horse-power motor. The tool-room, under care of an attendant, is well furnished with small tools and supplies, which are delivered to students on the check system. This room also contains a 14″x5′ Challenge engine-lathe with draw-bar chucks, and a power drill, both made by the American Tool Works Company, a Yankee drill-grinder, all run by an electric motor. Two 14″x6′ engine-lathes, American Tool Works Company design, have been recently constructed by students as regular course work, and as additions to equipment. An electric freight elevator connects with the wood-working room above. This latter room, 80′x50′, contains one 12″x6′ speed lathe; one 18″x12′ pattern-maker's lathe, with iron shears and traveling slide-rest and cross-feed; also floor stand and rear face plate; one scroll-saw; one combination cross-cut and rip-saw—with jointer head and boring attachment; one miter saw and universal trimmer; one Oliver hand-saw; nine double benches with tail vises and stops, and full sets of pattern-making tools for each; twelve Richardson iron-body, 11″x28″ speed lathes, with full set of tools. A seven-foot face-plate lathe, a disk sandpapering machine and a boring-machine have been built by the students and added to the equipment. The shafting is run by electric motor. Opening from this is a wash-room, 40′x20′, with stone floor, and 270 lockers.

In the various benches are also 275 drawers, reserved, with the lockers, for the students' use. On this floor is also the dynamo laboratory, 40′ x 50′. In this, at present, is a central line shaft, operated at constant speed by a Siemens and Halske 15-horse-power motor. Split wood pulleys of assorted diameters allow a great range of speed for motors and generators used for experimental study. Two standard Crocker Wheeler, 2½ K. W., D. C. machines, with removal coils for shunt, series and compound winding, serve for D. C. experiments. There are also a 2½ K. W., single-phase, rotary transformer; one 3½ K. W., two-phase generator; and one 4½ K. W., 125 V., compound multipolar, D. C. generator; one 2 K. W., three-phase Westinghouse induction motor; one 7½ K. W., one-, two- and three-phase G. E. rotary converter; several 1000-volt transformers of various types.

## Courses of Instruction.

All courses that are given in the first half of any term are indicated by (*a*); those occurring in the second half of any term by (*b*). The statement of hours refers to the number of hours per week.

### CHEMISTRY.

Professor BAILEY.
Associate Professor CADY.
Assistant Professor MCFARLAND.
Assistant Professor CURTIS.
Assistant Professor BUSHONG.
Mr. FARAGHER.
Mr. ALLEN.
Mr. FORD.

3.—ADVANCED INORGANIC CHEMISTRY. Lectures, recitations, and laboratory work. Required in Engineering School, Sophomore. 1st term, lectures three hours and laboratory four hours, 8 to 10. Associate Professor Cady, Assistant Professor McFarland, and Mr. Faragher.

4.—QUALITATIVE ANALYSIS. Lectures and laboratory work. Bailey and Cady's Guide to the Study of Qualitative Analysis. Must be preceded by course 3. Required in the Engineering School, Sophomore. 2d term, lectures two hours and laboratory six hours, 8 to 10. Associate Professor Cady and Mr. Faragher.

8.—QUANTITATIVE ANALYSIS. Lectures and laboratory work. Must be preceded by course 4. Required of chemical and mining engineers. 1st term, ten hours, 3:30 to 5:30; Professor Bailey and Assistant Professor Curtis. Or 2d term, ten hours, 8 to 10. Assistant Professor Curtis.

10.—GAS ANALYSIS. A laboratory course in the quantitative determination of the common gases, analysis of gaseous mixtures, flue gases, natural gas, etc. Both exact methods and technical methods will be employed. Gill's Gas Analysis and Hempel's Gas Analysis. Must be preceded by course 8. 1st term, two hours, Tuesday and Thursday, by appointment. Assistant Professor McFarland.

11.—OIL ANALYSIS. A laboratory course in the analysis of ani-

mal, vegetable or mineral oils. Determination of the specific gravity, viscosity, and other constants. Distillation as applied to mineral oils. Must be preceded by course 8. 2d term, three hours, Monday, Wednesday, and Friday, by appointment. Assistant Professor Bushong.

12.—Electrolytic Estimation of Metals. A laboratory course in the practical work of analysis by electrolysis, including the use of the rotating cathode. Must be preceded by course 8. 2d term, two hours, by appointment. Assistant Professor Curtis.

13.—Analysis of Boiler Feed-waters. Optional for engineers. Must be preceded by course 8. 1st term, two hours. Professor Bailey.

16.—Assaying and Metallurgical Analysis. This is a course in the volumetric analysis of the ores of copper, lead, iron, zinc, manganese, etc., followed by the analysis of bullion. During the first half of the term the time will be occupied with the fire assay of the ores of gold, silver, and lead. Lectures and laboratory work. Furman's Manual of Practical Assaying. Must be preceded by course 8 and mineralogy 1. Required of chemical and mining engineers, Junior. 2d term, ten hours, 3:30 to 5:30, and by appointment. Assistant Professor McFarland.

17.—Organic Chemistry. A study of the hydrocarbons and their derivatives, Lectures, recitations, and laboratory work. Must be preceded by courses 1 and 2. Required of chemical engineers, Junior. 2d term, ten hours, 3:30 to 5:30. Assistant Professor Bushong and assistants.

23.—Physical Chemistry. A course paying special attention to electrochemistry, Lectures and laboratory work. Must be preceded by chemistry 8, or by chemistry 3 and physics 7 and 8 and mathematics 7. Required of chemical engineers and electrical engineers; optional for mining engineers. 1st term, five hours, at 10:15. Associate Professor Cady.

Other courses in chemistry (the College) are open as optionals to chemical engineers.

## CIVIL ENGINEERING.

Professor MARVIN.
Assistant Professor HOAD.
Assistant Professor HUBBARD.
Assistant Professor H. A. RICE.

1.—TOPOGRAPHICAL DRAWING. A study of and practice in the conventional methods of representing topography, coupled with the platting of the results of field-practice in connection with surveying. Required of Sophomore civil and mining engineering students. 2d term, six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hubbard.

2.—RAILWAY DRAWING. Railway plats, profiles and plans for track and small structures. Lectures and drawing-room practice in tracing and blue-printing and in platting the results of field-work. Required of civil engineering students. Junior, 1st term, six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hoad.

3.—GRAPHICAL STATICS. The properties of equilibrium polygons and other methods of representing the actions of forces, with application to the determination of stresses in beams, roof trusses, and stone arches. Lectures and drawing. Required of civil engineering students. Junior, 2d term, six hours, Tuesday and Friday, 1:30 to 4:30. Assistant Professor Hoad.

4.—CONTRACTS AND SPECIFICATIONS.—An elementary course on the law of contracts, with special reference to engineering practice. The technical features of specifications. Methods of procedure in letting and conducting contract work, and the engineer's relation thereto. Required of all engineering students. Senior, 2d term, (*b*), five hours, at 11:15. Professor Marvin.

5.—SURVEYING. Engineer's instruments, their construction and adjustment. Methods of making and platting land, topographic, mining and hydrographic surveys. Sources of error and the means of controlling the precision of field-work. Leveling and earthwork. Required of civil and mining engineering students. Sophomore, 2d term, five hours, at 10:15 to 11:15, with one half-day per week in field-practice. Assistant Professors Hoad and Hubbard.

6.—SUMMER FIELD-WORK. Courses in practical surveying. The character of the work done will vary somewhat from year to year, depending upon the make-up of the body of students that go into camp. Small parties of three or four each are formed, and some of these are engaged in making topographical surveys of tracts of about one square mile each, laying out triangles and reading angles, leveling between stations, running stadia traverses, platting re-

sults, and drawing a contour map. Other parties may be engaged in laying out a short line of railway, in running precise levels, making a hydrographic survey, or gaging the flow of the Kansas river. All parties camp together. Required of Sophomore civil and mining engineering students and Junior civil engineering students. Ten hours per day for one month, at the close of the college year, in June. Assistant Professors Hoad and Hubbard.

7.—Hydraulic Cement. A laboratory course in testing hydraulic cements and making comparison of their qualities. Reading, experimental work, and reports of tests made. Required of civil engineering students. Senior, 2d term, four hours, Monday and Thursday, 3:30 to 5:30. Assistant Professor Hubbard.

8.—Masonry. Character of materials composing masonry. Methods of cutting and dressing stone. Foundations: Cribwork, coffer-dams, caissons, piles and pile-driving, concrete, pneumatic processes, etc. Masonry structures: Culverts, arches, piers, abutments, bridges, etc.; their form, construction, strength, and cost. Compound arches of concrete and metal. Recitations and lectures. Required of civil engineering students. Senior, 1st term, (*b*), five hours, at 9. Assistant Professor Hubbard.

9.—Roads and Pavements. A study of the materials for and methods used in the construction and improvement of country roads and city pavements. Earthwork, drainage, the road foundation, the wearing surface, etc. Principles governing the location of roads. The economic importance of the "good-roads movement." Required of civil engineering students. Junior, 2d term, two hours, Tuesday and Thursday, at 9. Assistant Professor Hoad.

10.—Railway Location. The principles involved in an economic location and construction of railways. Analysis of traffic and operating expenses. The influence of proposed changes in location upon the amount of total revenue from traffic, the bonded debt and the corresponding fixed charges for interest, the operating expense, and the dividend-paying capacity of the road. Methods of conducting field-work for preliminary and location surveys. Required of civil engineering students. Junior, 2d term, three hours, Monday, Wednesday, and Friday, at 9. Assistant Professor Hoad.

11.—Railway Surveying. A study of the methods of laying out and constructing railways. The setting out of simple and compound curves and calculation of excavation and embankment. Yards, turnouts, and switches. Easement curves of various types. Calculation of waterways, and methods of staking out foundations for culverts and bridges. This course must be preceded by a gen-

eral course in surveying. Required of civil engineering students. Junior, 1st term, five hours, at 10:15, with field-practice one-half day per week. Assistant Professors Hoad and Hubbard.

12.—Sanitary Engineering. The collection, removal and disposal of sewage by various methods. Water-carriage and pneumatic systems. Separate and combined systems. The construction of sewers, outfalls, manholes, and flushing appliances. Ventilation of sewers. Treatment of sewage. The collection and disposal of garbage and other refuse. Garbage destruction and utilization. Street cleaning. Required of civil engineering students. Senior, 1st term, (*a*), five hours, at 11:15. Assistant Professor Hoad.

13.—Sanitary Engineering. Water-supply. The requisites of a supply as to quality and quantity. The value of chemical and biological analyses and the interpretation of results. Relation of water-supply to the public health. Rainfall and the gathering and storage of surface-water. The collection of ground-water. The use of rivers and lakes as sources of supply. Distributing systems; conduits and pipe-lines, pumping machinery, the flow of water in open channels and closed conduits. The construction of dams and reservoirs. The purification of water. Methods of maintaining the efficiency of existing plants. Required of civil engineering students. Senior, 1st term, (*b*), five hours, at 11:15. Assistant Professor Hoad.

14.—Roofs and Bridges. Analytical and graphical calculation of stresses in framed structures under various forms of loading. This course must be preceded by course 2 in mechanics. Required of civil engineering students. Senior, 1st term, ten hours, 1:30 to 3:30. Assistant Professor H. A. Rice.

15.—Bridge Designing. A study in bridge details and the dimensions of parts. Students work out designs for a plate girder and a simple truss. Must be preceded by course 14. Required of civil engineering students. Senior, 2d term, ten hours, 1:30 to 3:30. Assistant Professor H. A. Rice.

19.—Sanitary Engineering. A course designed to follow 12 and 13. Lectures, recitations, and reading. Optional for Seniors. 2d term, five hours. Assistant Professor Hoad.

(For courses open to graduate students, see the general catalogue.)

## ELECTRICAL ENGINEERING.

Professor BLAKE.
Assistant Professor M. E. RICE.
Assistant Professor FREEMAN.

Courses 1 to 8, inclusive, 11 and 13 are required of electrical engineering students. Courses 12 and 14 are required of mechanical engineering students. Courses 9 to 11, inclusive, and 15 are optionals for electrical engineering students.

1.—THEORY OF ELECTRICITY AND MAGNETISM. A mathematical treatment of the general principles involved in direct-current devices and introductory to their application in direct-current machinery. Junior, 1st term, five hours, at 10:15. Professor Blake.

2.—THEORY OF ALTERNATING CURRENTS. A mathematical treatment of the general principles involved in alternate-current phenomena and introductory to their application in polyphasal machinery. Junior, 2d term, five hours, at 9. Professor Blake.

3.—DYNAMO MACHINERY. Theory and fundamental types of direct-current generators and motors. Junior, 2d term, three hours, at 11:15. Assistant Professor M. E. Rice.

4.—DYNAMO MACHINERY. Theory and general types of alternating-current generators and motors. Senior, 1st term, five hours, at 11:15. Assistant Professor Freeman.

5.—DYNAMO DESIGN. Practical calculations and details of construction, together with working-drawings for selected types of generators and motors. In addition to general classroom work, each student will prepare one or more special designs, which may afterward be constructed in the shops. Senior, 1st term, ten hours, 8 to 10:15. Assistant Professor Freeman.

6.—ELECTRICAL LABORATORY. Junior, 1st term, six hours, 2:30 to 5:30. Assistant Professor M. E. Rice.

7.—ELECTRICAL LABORATORY. A continuation of course 6. Junior, 2d term, four hours, 1:30 to 5:30. Assistant Professor M. E. Rice.

8.—ELECTRICAL LABORATORY. Senior, 1st term, six hours, 2:30 to 5:30. Assistant Professor Freeman.

9.—ELECTRIC LIGHTING. Senior, 2d term, (*a*), five hours, at 11:15. Assistant Professor Freeman.

10.—ELECTRIC POWER TRANSMISSION. Senior, 2d term, (*b*), five hours, at 11:15. Assistant Professor Freeman.

11.—AMERICAN TELEPHONE PRACTICE. Senior, 2d term, (*a*), five hours, at 9. Assistant Professor Freeman.

12.—Electric Light and Power Transmission. A brief course. Required of mechanical engineering students. Junior, 2d term, five hours, at 8. Assistant Professor Freeman.

13.—Professional Thesis. Senior, 2d term, six hours, 2:30 to 5:30. Assistant Professor Freeman.

14.—Dynamo Machinery. A briefer course than 3 or 4, covering both direct- and alternating-current machines. Must be preceded by physics 4 and 5 and calculus. Junior, 1st term, five hours, at 10:15. Assistant Professor M. E. Rice.

15.—Electro-technical Literature. Senior, 2d term, (*b*), five hours, at 9. Assistant Professor Freeman.

## ENGLISH LANGUAGE AND RHETORIC.

Assistant Professor Raymond.
Assistant Professor Lynn.
Assistant Professor Sisson.
Assistant Professor Gray.
Miss Gardner.
Miss Leach.

1.—Rhetoric and English Composition. Outlines of rhetoric, with exercises and themes. Required of all Freshmen. 1st term, three hours, at 8, 9, 11:15, 3:30, or 4:30. Assistant Professors Lynn and Sisson and assistants.

2.—Rhetoric and Composition. Two hours, Tuesday and Thursday, at 8, 9, 11:15, 3:30, or 4:30. Assistant Professors Lynn and Sisson and assistants.

3.—Advanced English Composition. Study of the principles of discourse, with special reference to the forms used in engineering work, with exercises. Required of Juniors and Seniors in the School of Engineering. 1st term, four hours: Lectures Tuesday and Thursday, at 8; conferences Wednesday and Friday, at 8. Assistant Professors Raymond and Gray.

## GEOLOGY.

Professor Haworth.

1.—Elements of Physical Geology. A study of the elementary principles of general geology, including physical conditions throughout geologic time and the formation of continents; nature and origin of the different kinds of rocks and the rock-forming materials; the destructive process of erosion or denudation, and the economic products obtained by the various mining operations. Required of Junior civil and Sophomore mining engineers. 1st term, five hours, at 11:15. Professor Haworth.

4.—Economic Geology. A general study of the metallic and non-metallic products of the mine, quarry, and well, considered from a scientific and a practical standpoint, including the nature, origin, amount and geographic and geologic distribution of the same. Must be preceded by elementary chemistry and course 1, or mineralogy 1. Required of Junior mining engineers. 1st term, lectures and library work, three hours, Monday, Wednesday, and Friday, at 9; 2d term, two hours, Tuesday and Thursday, at 10:15. Professor Haworth.

Other courses in geology (the College) are open as optionals to engineering students. For details, see the courses in College section of this catalogue.

## MATHEMATICS.

Professor Miller.
Professor Newson.
Assistant Professor Van der Vries.
Assistant Professor Ashton.
Mr. Shirk.

2.—College Algebra. Rapid review of exponents, radicals, and quadratic equations; graphic representation; complex numbers; logarithms; determinants; theory of equations; numeral equations of higher degree. Required of all Freshmen in the School of Engineering. Wentworth's College Algebra, revised edition. Both terms. 1st term, eight sections, three hours, Monday, Wednesday, and Friday, at 8, 9, 11:15, or 2:30; 2d term, three sections, three hours, Monday, Wednesday, and Friday, at 11:15 or 2:30.

3.—Plane Trigonometry. The six trigonometric functions; principal formulas of plane trigonometry; solution of triangles and practical problems. Required of all Freshmen in the School of Engineering. Miller's Trigonometry. Both terms. Tuesday and Thursday. 1st term, eight sections, two hours, at 8, 9, 11:15, or 2:30; 2d term, three sections, two hours, at 11:15, or 2:30.

4.—Analytical Geometry I. The straight line and circle; loci problems. Required of all Freshmen in the School of Engineering. Ashton's Analytic Geometry. Both terms. Tuesday and Thursday. 1st term, two sections, two hours, at 10:15 or 11:15; 2d term, five sections, two hours, at 8, 9, 10:15, 11:15, or 3:30.

5.—Calculus I. Differential calculus; fundamental principles; derivatives; applications to geometry and mechanics; maxima and minima; indeterminates; series. Required of all Freshmen in the School of Engineering. Granville's Calculus. Both terms. Monday, Wednesday, and Friday. 1st term, two sections, two hours,

at 10:15 or 11:15; 2d term, five sections, two hours, at 8, 9, 10:15, 11:15, or 3:30.

6.—Analytical Geometry II. Conic sections; higher plane curves; solid analytics. Reqired of all Sophomores in the School of Engineering. Ashton's Analytic Geometry. Both terms. Tuesday and Thursday. 1st term, three sections, two hours, at 10:15 or 1:30; 2d term, two sections, two hours, at 9 or 10:15.

7.—Calculus II. Integral calculus; integration; definite integrals; applications to lengths, areas, and volumes. Required of all Sophomores in the School of Engineering. Granville's Calculus. Both terms. Monday, Wednesday, and Friday. 1st term, three sections, three hours, at 10:15 or 1:30; 2d term, two sections, three hours, at 9 or 10:15.

## MECHANICS.

Assistant Professor H. A. Rice.
Assistant Professor Hood.
Assistant Professor Hubbard.
Assistant Professor Corp.
Assistant Professor Wheeler.

1.—Mechanics. A study of the laws of statics and dynamics. Action of forces upon bodies and the resulting motions. Required of all engineering students. Senior for mining engineers, Junior for all others. 1st term, five hours, at 8 or 9. Assistant Professor H. A. Rice.

2.—Strength of Materials. The theory of resistance to stress and applications to engineering construction. Required of all engineering students. Senior for mining engineers, Junior for all others. 2d term, five hours, at 8 or 10:15. Assistant Professor H. A. Rice.

3.—Testing of Materials. A laboratory course to accompany course 2. The testing of iron, steel, wood and other materials of construction for resistance to tension, compression, torsion, bending, and shearing. Experimental determination of the limits of safe loading. The testing of paving brick. For all engineering students. Senior for mining engineers, Junior for all others. 2d term, four hours, Monday, Tuesday, Thursday, Friday, or Saturday. Assistant Professors Hood and Corp.

4.—Hydraulics. A study of the laws governing the pressure and flow of liquids and gases and the force of and resistance to their motion. Required of civil and mechanical and optional for mining engineering students. Senior, 1st term, (*a*), four hours, at 10:15. Assistant Professor Hubbard.

5.—Hydraulic Laboratory. A course to accompany course 4 and the course in hydraulic machinery. Experimental work with the flow of water over weirs, through orifices and pipes, and in testing hydraulic machinery. Required of civil and mechanical engineering students. Senior, 1st term, two hours, Tuesday, Thursday, or Friday, 3:30 to 5:30. Assistant Professor Hood.

6.—Elementary Mechanics. An elementary course, requiring a knowledge of elementary physics and trigonometry. Freshman, 1st term, two hours, Tuesday and Friday, at 8, 9, 11:15, 3:30, or 4:30. Assistant Professors Hood, Hubbard, Corp, and Wheeler.

## MECHANICAL DRAWING.

Assistant Professor Hood.
Assistant Professor Hubbard.
Assistant Professor Corp.
Assistant Professor Wheeler.

1.—Free-hand Drawing. Outline drawing with lead-pencil. Drawing of simple geometrical figures for hand and eye training. Drawing from the object, teaching accuracy in observation. Required of all engineering students. Freshman, 1st six weeks of 1st term, six hours. Assistant Professors Hood and Wheeler.

2.—Elementary Mechanical Drawing. Accurate drawing of geometrical figures, teaching proper use of instruments. Drawing-board constructions for conic sections and other plane curves. Standard forms of lettering for titles. Continual practice in single-stroke free-hand lettering for notes on drawings. Required of all engineering students. Freshman, 1st fourteen weeks of first term, six hours. Assistant Professors Hood and Wheeler and assistants.

3.—Descriptive Geometry. Church's Descriptive Geometry. Execution of a number of original exercises. Required of all engineering students. Freshman, 2d term, three hours, Monday, Wednesday, and Friday, at 8, 9, 3:30 or 4:30. Assistant Professors Hood, Hubbard, Corp, and Wheeler.

4.—Projection Drawing. Construction of problems in projections, sections, intersection of surfaces, development of surfaces, isometric drawing. Dimensioning of drawings with special reference to methods used in practice. Parallel with course 3. Required of all engineering students. Freshman, 2d term, six hours. Assistant Professor Wheeler and assistants.

5.—Shades, Shadows, and Perspective. Construction and rendering of drawings in projection, showing shades and shadows. Elements of perspective. Construction of perspective drawings from

given dimensions. Required of civil engineering students. Sophomore, 1st term, six hours. Assistant Professor Hubbard.

6.—MACHINE DRAWING. Free-hand working sketches from machine parts and assembled machines; working-drawings from these sketches in accordance with approved practice. Detailing from assembled drawings. Tracing and blue-printing. Lectures on drafting-room methods. Required of electrical, mechanical, mining and chemical engineering students. Sophomore, 1st term, six hours. Assistant Professors Hood and Wheeler.

## MECHANICAL ENGINEERING.

Associate Professor WALKER.
Assistant Professor HOOD.
Assistant Professor CORP.
Assistant Professor WHEELER.
Mr. WARD.

1.—GRAPHICS. Graphical analysis of stresses in roof trusses, followed by graphical statics of machines. Text, Hermann-Smith's Graphical Statics of Mechanisms. Sophomore, 2d term, six hours, Monday and Wednesday, 1:30 to 4:30. Assistant Professors Hood and Wheeler.

2.—MECHANICS OF MACHINERY. (*a*) A study of the forces produced in the operation of machine tools, die-stamping machinery, shears, riveters, etc. Lectures and recitations. Six weeks. (*b*) Mechanics of the steam-engine. The engine mechanism; valve motion; valve designing; analysis of forces due to steam pressure; crank effort diagrams and fly-wheel design. Recitations and many practical problems. Text, Heck's Steam Engine. Junior, 2d term, three hours, Monday, Wednesday, and Friday, at 9. Associate Professor Walker.

3.—KINEMATICS. A study of the motion of machine parts and of methods of transmission of motion by gears, belts, cams, etc. A drawing-room course. Six hours. Text, Barr's Kinematics of Machinery. Junior, 2d term, Tuesday and Thursday, 1:30 to 4:30. Assistant Professor Corp.

4.—MACHINE DESIGN. Designing and drawing of simple machine members, followed by the complete design of some metal-working machine. Students wishing to specialize in steam-power generation may substitute chemistry for this work during the second half-term. One hour lecture and five hours drawing. For students not taking course No. 8, two hours lectures and four or six hours drawing. Text, Kent's Mechanical Engineer's Hand-

book. Senior, 1st term, Monday and Wednesday, 1:30 to 4:30. Associate Professor Walker and Assistant Professor Corp.

5.—Designing. Students specializing in power development will design either a steam-engine or a gas-engine, making complete drawings. Others will prepare plans for some type of shop or factory building involving steel construction, and including the design of a traveling crane for the handling of material. Senior, 2d term, eight hours, Tuesday and Thursday, 1:30 to 5:30. Associate Professor Walker.

6.—Boilers and Steam-engines. Types of boilers and engines; principles of operation and construction; care and management; a careful study of the methods of construction; boiler and engine accessories; power of the engine; use of the engine indicator. Recitations, lectures, and one-half day in the engineering laboratory. Text, Spangler's Elements of Steam Engineering. Sophomore, 2d term, five hours, at 10:15. Mr. Ward.

7.—Engines and Boilers. Types of engines; valve motions; governors; dynamics of moving parts; indicator and cylinder analysis; accessories and connections. Boilers: General construction, care, and management; accessory apparatus; fuels. Lectures, recitations, and five half-days in the engineering laboratory. Must be preceded by physics 1 and 2. Required of civil engineering students. Junior, 2d term, five hours, at 11:15. Assistant Professor Corp.

8.—General Machine Design. Proportioning and designing machine parts, fastenings, etc., for durability and strength; designing of gears, belt and rope transmission systems, shafting, shrink and forced fits, shaft couplings, fly-wheels, cylinders, and riveted joints. Recitations and problems. Text, Jones's Machine Design, vol. II. Senior, 1st term, three hours, Monday, Wednesday, and Friday, at 9. Assistant Professor Corp.

9.—The Gas-engine. Power, efficiency and economy of the gas-engine; study of the forces produced by gas pressure and inertia; structural design. Recitations and lectures. Text, Lucke's Gas Engine Design. Senior, 2d term, two hours, Tuesday and Thursday, at 9. Associate Professor Walker.

10.—Hydraulic Machinery. Study of hydraulic engines, water-wheels, turbines and impulse wheels, pumps and rams, elevator machinery, and special applications of hydraulic power. Senior, 1st term, (*b*), four hours, at 10:15. Associate Professor Walker.

11.—THERMODYNAMICS. Study of the relations of heat phenomena. Theory of gases and vapors. Theory of heat engines and discussion of heat efficiencies. Must be preceded by physics 1 and 2 and calculus. Lectures, recitations, and problems. Texts, Reeves's Thermodynamics and Spangler's Notes on Thermodynamics. Senior, 1st term, four hours, at 11:15. Associate Professor Walker.

12.—ADVANCED STEAM ENGINEERING. Study of heat losses in the steam-engine, with methods of reducing the same; compounding; superheating; jacketing; designing of reciprocal engines; principles of operation and design of air-compressors and refrigerating machinery; the steam jet; form of nozzle for adiabatic jet; and design of the steam-turbine. Recitations and lectures. Texts, Heck's Steam Engine, Reeves's Thermodynamics, and Kent's Mechanical Engineer's Handbook. Senior, 2d term, three hours, Tuesday, Thursday, and Friday, at 8. Associate Professor Walker.

13.—ENGINEERING PRACTICE. Power-house equipment and construction. Power development by water, steam and gas considered in relation to adaptability. Application of power to machinery by mechanical and by electrical transmission compared with reference to economy. Influence of modern methods on cost of manufacturing. Senior, 2d term, (*a*), four hours, at 11:15. Associate Professor Walker.

14.—ENGINEERING LABORATORY. (*a*) Theory and use of planimeters; calibration of apparatus; tests of steam calorimeters, separators, and injectors; cement testing; valve setting. (*b*) For Senior electricals, efficiency tests of steam-boiler and engine, and gasoline-engine, with complete thermal analysis. For Junior mechanicals, flue-gas analysis, proximate analysis of coal, and tests for physical properties of lubricating oils. 1st term, four hours, Tuesday or Thursday, 1:30 to 5:30. Associate Professor Walker and Assistant Professor Corp.

15.—ENGINEERING LABORATORY. Complete testing of lubricants; fuel calorimetry; efficiency tests of steam-boiler, engine (with Hirn's analysis), steam-pump, gasoline-engine, and air-compressor. Chart study of steam-plant efficiency. Special subjects for investigation are assigned, to test the student's capacity for original work. Senior, 2d term, four hours, Monday or Wednesday, 1:30 to 5:30. Assistant Professor Corp.

16.—THESIS WORK. Senior, 1st term, Friday, 1:30 to 3:30; 2d term, Friday, 1:30 to 5:30. Associate Professor Walker.

17.—SUMMER VACATION WORK. Two months to be spent in regular work in some shop or manufacturing plant of good stand-

ing. A report on this work, with a certified statement from the shop foreman or the superintendent, must be presented before credit can be given.

18.—Advanced Laboratory Work. Research work on special subjects, for graduate students only. Time to be arranged by special assignment. Associate Professor Walker.

19.—Mechanics of Machinery. A course designed especially for electrical students. Junior, 2d term, three hours, Monday, Wednesday, and Friday, at 8. Associate Professor Walker.

## MINERALOGY.

Assistant Professor Kay.

1.—Elementary Mineralogy I. A brief course in crystallography, blowpipe analysis, and systematic mineralogy, consisting of lectures and laboratory work as follows: Crystallography.—A study of the properties of crystals and the crystal systems, with laboratory exercises, using natural crystals and crystal models. Considerable work is required in drawing crystal forms and measuring crystal angles. Moses and Parsons's Text-book on Mineralogy will be used. Chemical mineralogy.—In blowpipe analysis sufficient practice is required to familiarize the student with all the ordinary blowpipe tests for mineral identifications. Physical Mineralogy.—The student is required to become thoroughly familiar with the methods of identifying all the more common minerals by their physical characters, such as crystalline form, cleavage, gravity, luster, streak, hardness, and color. The uses, localities and productions of the minerals of economic importance are discussed. Required of mining and chemical engineers, Sophomore. Open to Juniors and Seniors who have had chemistry through qualitative analysis. It may also be used for a graduate credit, provided some extra time is given to it. Sophomore, 2d term, ten hours, 3:30 to 5:30. Assistant Professor Kay.

## METALLURGY.

Assistant Professor McFarland.

21.—Metallurgy I. General metallurgy and metallurgy of iron and steel. Properties of metals and alloys, metallurgical terms and processes, furnace types, refractory materials and slags, fuels and thermal measurements, calculation of furnace charges, etc., followed by a study of iron and its ores; methods for manufacture of pig-iron and wrought iron; manufacture of steel by crucible, Bessemer and open-hearth processes; special steels and special

processes; heat treatment and metallography of steel. Must be preceded by chemistry 3. Required of mechanical engineers, Junior, and chemical engineers, Senior; optional in the College and for mining engineers, Senior. 1st term, five hours, daily, at 11:15. Assistant Professor McFarland.

22.—METALLURGY II. Metallurgy of lead, zinc, and copper, followed by metallurgy of silver, gold, mercury, and tin. Study of principal ores and methods of extraction and refining, amalgamation, chlorination and cyanide processes, pyritic smelting, etc. Must be preceded by chemistry 4. Required of mining engineers, Senior; optional in the College and for chemical engineers, Senior. 2d term, five hours, daily, at 11:15. Assistant Professor McFarland.

## MINING ENGINEERING.

Professor HAWORTH.
Assistant Professor HODSON.

### COURSES FOR UNDERGRADUATES ONLY.

1.—MINING. (*a*) *Excavating, Boring, Blasting, and Surveying.* Excavation: Excavation of various kinds of earth, such as soils, clays, sands, and rocks, with or without ground-water; quarrying stone, etc., with various kinds of tools and machinery employed for same. Boring: Methods and appliances for prospect drilling and for drilling oil-wells and gas-wells, including different varieties of tools and machinery employed, difficulties to be encountered, and conditions under which prospect boring or drilling is profitable. Blasting: A study of the various kinds of explosives used in mining and excavating, such as black powder and the various kinds of the nitroglycerines and other explosives, including their manufacture and modes of use, and precautions necessary in handling them. Mine surveying: General principles of underground surveying and relation between underground and surface surveys; the construction of mine maps and mine sections, and measurements required in connection with contracts and location of new works. To be supplemented by field-work during summer vacation.

(*b*) *Shafting, Tunneling, and Mine Support.* Shafting: Shaft sinking; methods employed in sinking shafts through soft and hard materials, dry or water-bearing, including the hoisting and handling of excavated material, and methods of shaft timbering and shaft lining. Tunneling: Methods of driving tunnels through different kinds of earth and rock, including drainage and ventilation, tunnel supports and linings, and methods of choosing locations for tunnels. Mine supports: Including a general study of the various

methods of supporting all forms of underground openings by timbers, masonry, metallic linings, and other methods peculiarly adaptable to special conditions. Required of mining and engineering students. Senior, 1st term, five hours, at 8. Assistant Professor Hodson.

2.—Ore Dressing. General methods and theories for separating different ores from foreign materials and for washing coals, clays, and other products. It includes a study of hand dressing, crushing, screening, and jigging, and a study of the machinery for the same; the concentration of slimes; milling methods for gold and silver ores. Lectures and laboratory work. Required of mining engineering students. Junior, 1st term, two hours, Tuesday and Thursday, at 9; 2d term, three hours, Monday, Wednesday, and Friday, at 10:15. Assistant Professor Hodson.

3.—Mine Plant; Mine Constructions. (*a*) *Mine Plant.* A study of the various kinds of machinery employed in mine development and mine operation, and methods of placing the same, including machinery required for drilling, blasting, hoisting, drainage, and mine ventilation; and a study of large mining plants in the United States and abroad. Required of mining engineering students. (*b*) *Mine Constructions.* Building materials, foundations, mine building and constructions, with special reference to mine work. Required of mining engineering students. Senior, 1st term, five hours, at 10:15. Assistant Professor Hodson.

4.—Prospecting, Exploring, Developing, and the Exploitation of Mineral Properties. A study of the best methods of prospecting, developing and working mines. Required of mining engineering students. Senior, 2d term, (*a*), five hours, at 11:15. Assistant Professor Hodson.

5.—Mine Engineering—Extraction, Drainage, and Ventilation. Extraction: Machinery and methods used in handling minerals on the surface and under ground; tramways, cars, propelling forces; methods of loading and unloading cars; methods of storing mine products. Drainage: Sources, amount and character of mine waters, and methods of controlling the same; mine drainage by natural and artificial methods; water-supply; inundations, and modes of escape from inundated mines. Ventilation: Air of mines; underground gases and gases produced by blasting and other mining operations; methods of ventilation; mine explosions of firedamp and dust; mine fires; relief and rescue in case of accident. Senior optional; 2d term, five hours, at 9. Assistant Professor Hodson.

6.—Mine Administration. Mine accounts and management; care of sick and injured in case of accident; rules and regulations for equipping expeditions and maintaining camps. Optional for mining engineering students. Senior, 1st term, (*a*), five hours, by appointment. Assistant Professor Hodson.

7.—Professional Thesis. Before graduation a thesis will be required of each student, embodying an elaborate description of some phase of mining or metallurgical processes, or of ore formation, or a description of the mineralogy or geology of some mining locality. It is presumed that material will largely be gathered for thesis work during the summer vacation excursions, but ideal plants may be constructed or mines developed in exceptional cases. The thesis work will be under the supervision of the department of geology and mining. It should be begun during the first term of the Senior year. A typewritten copy of the thesis must be presented to the head of the department of geology and mining not later than May 15, and must be approved by the head of the department before graduation.

8.—Summer Excursion Work. During the summer vacation between the Junior and Senior years students will be required to devote about four weeks to a study of some of the more important mining localities of America. Excursions will be made by the students, accompanied by instructors, so that a careful study may be made of the geology and mineralogy of the region, of the mines and mining methods, and of the plants for mining, ore dressing, and smelting. It is expected that this work will be exceedingly beneficial to the student. It will, therefore, be passed upon and graded the same as other studies in the course. Professor Haworth and Assistant Professor Hodson.

## MODERN FOREIGN LANGUAGES.

The course in French, German or Spanish to be taken by engineering students during the Freshman year can only be determined after consultation in individual cases, the choice depending upon the particular language or grouping of languages offered for entrance. In general, one offering three units of Latin may begin any one of the above-named languages. One offering one or more units of French or German will find opportunity to continue such language.

## PHYSICS.

Professor BLAKE.
Assistant Professor STIMPSON.

7.—MECHANICS, SOUND, AND HEAT. A fundamental course of experimental lectures and recitations. Required of all engineering students. 1st term, four hours, at 11:15; laboratory two hours. Professor Blake and Assistant Professor Stimpson.

Prerequisites: Plane trigonometry and analytical geometry.

8.—ELECTRICITY, MAGNETISM, AND LIGHT. Continuation of physics 7. Required of all engineering students. 2d term, four hours, at 11:15; laboratory two hours. Professor Blake and Assistant Professor Stimpson.

Prerequisites: Plane trigonometry, analytics, and calculus.

## SHOP WORK.

Mr. WARD.
Mr. HANSON.
Mr. JONES.

Required of electrical and mechanical engineering students through the first three years of their course and all other engineering students throughout the Freshman and Sophomore years. Total hours per term, seventy-eight.

1.—Forging, welding and working iron at proper heat. Making steel tools, and tempering. Freshman, 1st or 2d term, five hours. Mr. Hanson.

3.—Use of hand wood tools; sharpening; the lathe and pattern-turning; pattern-making, core boxes, draft, shrinkage, finish, etc.; selection of woods; exercises and working from special designs. Freshman, 1st or 2d term, five hours. Mr. Jones.

3.—Filing, chipping, scraping, drilling, babbitting, and thread-cutting. Sophomore, 1st term, five hours, Mr. Ward.

4.—Lathe work: Turning cylinders, tapers, curves, and cutting threads. Sophomore, 2d term, five hours. Mr. Ward.

5.—Lathe work: Turning to close fit; eccentric and special thread-cutting. Junior, 1st term, five hours. Mr. Ward.

6.—Lathe, planer and milling-machine work. Boring, reaming and shaping to special design. Tool-making, hardening, and grinding. Junior, 2d term, five hours. Mr. Ward.

# IV. The School of Law.

## Faculty.

FRANK STRONG, Ph. D., President.

JAMES W. GREEN, A. M., Dean. Professor of Law.

WILLIAM L. BURDICK, Ph. D., LL. B., Professor of Law.

WILLIAM E. HIGGINS, B. S., LL. B., Associate Professor of Law.

———, Assistant Professor of Law.

### Special Lecturers for 1906-'07.

JOHN C. POLLOCK, Judge of the United States District Court, Topeka.

J. G. SLONECKER, United States Referee in Bankruptcy, Topeka.

R. F. THOMPSON, ex-Judge of the District Court, Minneapolis.

JOHN D. MILLIKEN, attorney at law, McPherson, "The Fourteenth Amendment to the Constitution of the United States."

THOMAS A. NOFTZGER, State Senator, Anthony.

EDWIN P. GATES, ex-Judge of the Circuit Court, Kansas City, Mo., "Historical Development of the Code."

CLARENCE S. PALMER, attorney at law, Kansas City, Mo., "Municipal Charters."

EDWARD L. SCARRITT, ex-Judge of the Circuit Court, Kansas City, Mo.

SELDEN P. SPENCER, ex-Judge of the Circuit Court, St. Louis, Mo., "Ethics of the Legal Profession."

JOHN H. ADAMS, St. Louis, Mo., "Practical Fire Insurance."

ROBERT E. BALL, attorney at law, Kansas City, Mo.

## Purpose of the School.

It is the aim of the School of Law to give all its students a thorough acquaintance with the general principles of American law, and to furnish a course of legal instruction that shall fit them to practice at the bar of any state of the Union; and to give those who do not expect to become practicing attorneys, but who desire to pursue certain legal subjects for their bearing upon business, such instruction as may be best suited to their needs.

### Degrees Granted.

The course of study of the School of Law leads to the degree of bachelor of laws (LL. B.)

### System of Instruction.

It is believed to be proved by experience that, to be thoroughly efficient, instructional training in law courses must be given by resident teachers who give their whole time to instruction. The work of the School of Law is under the direction of four resident instructors, supplemented by lectures on special topics by competent men in the actual practice of law.

### Method of Teaching.

There are in general three methods of class instruction in law—by lectures, by text-book, and by cases. The School of Law at the University does not pursue any method to the entire exclusion of the others. It uses the text-book method very largely for the beginning classes, and makes use of the lecture and case methods more largely as classes advance in the course. Experience seems to have shown, however, that the students get a clearer and more lasting knowledge of the fundamental principles of law through the study of a text-book and recitations in the classroom, together with a parallel study of cases to illustrate the principles involved.

The student is given large opportunity for free discussion of the topics in question, and is brought as close as possible into personal touch with his instructor.

### Work in Preparation for Law.

All persons proposing to enter upon the study of law are earnestly recommended to take first either a regular or special course in the College. A good fundamental education is necessary to a successful study of law. Especially is it necessary now when the practitioner must come into competition with men who have had

a thorough university training before they entered upon a study of law.

The College offers special work in subjects of great value as preparatory to law, in English and American constitutional and political history, constitutional law, political science, economics, sociology, history of international and common law, in rhetoric and English composition, and debating. These courses are especially recommended in preparation for law.

## Requirements for Admission.

There are two ways of admission to the School of Law of the University: First, by certificate; second, by examination.

**By Certificate.** Nearly all students enter the School of Law by certificate from high schools, academies, or other preparatory schools. The method of accrediting by certificate is the same as that in the College.

**By Examination.** Candidates for admission to the Junior class of the School of Law who cannot bring certificates are required to be examined in the subjects named above. The time and place of examination are the same as in the College. (See page 73.)

## Subjects for Admission.

The subjects for which entrance work may be offered, together with the number of units, are arranged in six groups, as follows; a total of fifteen units must be offered:

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|---|---|---|
| GROUP I, English. | English, four units. | Three units are required. |
| GROUP II, Mathematics. | Algebra, one and one-half units.<br>Plane geometry, one unit.<br>Solid geometry, one-half unit.<br>Plane trigometry, one-half unit.<br>Advanced algebra, one-half unit. | The algebra, one and one-half units, and plane geometry, one unit, are required. |
| GROUP III, Foreign Languages. | Latin, four units.<br>Greek, three units.<br>German, three units.<br>French, three units. | Of these, three units are required, which must be, first, in Latin, or, second, in German. |

| | | |
|---|---|---|
| GROUP IV, Physical Sciences. | Physical geography, one unit.<br>Physics, one unit.<br>Chemistry, one unit. | One unit is required. |
| GROUP V, Biological Sciences. | Botany, one unit.<br>Zoölogy, one unit.<br>Physiology, one unit. | Optional. |
| GROUP VI, History. | Greek and Roman, one unit.<br>Mediæval and modern, one unit.<br>English, one unit.<br>American, one unit.<br>Economics, one unit. | Two units are required. |

As observed above, to secure unconditional admission to the Junior class of the School of Law, the candidate must offer fifteen units from the foregoing list of accredited preparatory subjects. Eleven and one-half units are required, as indicated; the other three and one-half units may be chosen at will from the groups.

In view of the difficulty some preparatory schools may have in expanding their courses of study so as to include all the prescribed units, until further notice candidates will be admitted unconditionally who offer fifteen units from the foregoing list, although some of the prescribed units may not have been completed. Such postponement of the completion of preparatory requirements is possible only in those subjects in which elementary courses are offered in the College. They include all the subjects in the list of preparatory studies except three units of English, two units of Latin, two and one-half units of mathematics, physical geography, and American history.

### Length of Law Course.

The complete course includes three years, each of which occupies eight and one-half months (excluding two weeks' recess at Christmas). The first term of the year 1906–'07 will begin on Wednesday, the 12th day of September, 1906.

### The College and the School of Law in Six Years.

A regular course in the College, however, is strongly recommended. During the Senior year of the College the student may elect one-half year's work from the course in the School of Law. By this arrangement, the student, by reasonable extra work, may finish both the College and the School of Law in six years.

### Courses in Law in the Summer Session.

Attention is called to the opportunity of shortening the law course, or of correcting irregularities therein, by taking such law subjects as are offered in the Summer Session of the University.

A course has been arranged which will enable a person who enrolls in the Summer Session of 1906 to graduate after attending two regular sessions of the University, provided he has previously completed the preparatory work required for entrance to the Law School, as laid down in this catalogue. For such course, the student is referred to the outline of course of study in the Summer and Regular Sessions. The Summer Session opens June 7 and closes July 18, 1906.

### Admission to Advanced Standing.

Persons who have previously completed a part of the course are admitted to advanced standing in the Junior and Middle classes, on satisfying the Faculty as to their qualifications. No one will be so admitted to the Senior class except upon passing a satisfactory examination upon the requirements for admission, and also upon the work prescribed for the Junior and Middle classes.

Certificates of work done in other law schools of recognized standing and equivalent requirements may be received in lieu of examinations for advanced standing.

### Special Students.

Opportunity is given in the School of Law for the admission of persons of mature years who desire to pursue special work, without following any prescribed course or becoming candidates for a degree.

The admission of such special students is directly under the control of the Dean of the School, whose certificate of acceptance must be presented to the Registrar before registration. Applicants for standing as special students must present satisfactory evidence of proper preparation for the studies desired and must also meet other requirements as fixed by the Faculty.

Special students are subject to the same regulations as regular students with regard to the quality of work performed and attendance at recitations and examinations.

### Examinations.

The members of each class will be examined upon each topic when completed. A final examination will be held at the end of the third year, embracing all the studies of the course. The degree of bachelor of laws will be conferred upon members of the Senior class who complete the course of study according to the requirements.

### Thesis.

Each member of the Senior class who is a candidate for a degree is required to prepare and to deposit with the Faculty, at least one month before graduation, a thesis upon some legal topic selected by himself and approved by the Faculty, which thesis shall not be less than forty folios in length. The production must be satisfactory in matter, form, and style, and the student presenting it must hold himself in readiness to be examined upon the subject.

### Certificate of Attendance.

If the student does not graduate, he may, on application to the Registrar, receive an official certificate of his attendance and of the work accomplished by him in the school.

### Admission to the Bar.

The legislature of 1903 amended the statute regulating admission to the bar, and provided for state examinations by a commission appointed by the supreme court. The board of examiners meets at Topeka on the third Monday in February, June, and October. Applications for examination and proof of qualifications must be filed with the secretary of the board at least three weeks before the examination. Printed forms of application may be obtained from L. H. Perkins, the secretary of the board, at Lawrence.

All applicants must present high-school certificates or affidavits from teachers showing the completion of the following subjects, or pass examinations therein, to wit: Three years English—grammar, rhetoric, and literature; arithmetic, algebra, geometry; ancient history, Roman, English and American history; civil government; the elements of physics, physical geography, botany, biology; political economy and sociology.

All candidates for admission are required to pass a written examination covering their legal qualifications. All subjects included in this examination are within the course of study of the University School of Law.

### Practice Courts.

Systematic work in moot and practice courts is required throughout the course. Weekly sessions of these courts are held.

**Junior Year.** In the Junior year preliminary instruction is first given in the study of cases, the making of briefs, and the preparation of cases for argument. Following this preliminary instruction, moot court is held under the direction of a member of the

Faculty. The places of judges, attorneys, clerk and other court officers are filled in rotation by members of the class. Cases involving statements of fact are assigned. Written briefs are required to be prepared, served upon the opposing attorneys, and submitted to a court composed of two members of the class and a member of the Faculty. Written opinions containing a full discussion of the legal questions presented are required to be handed down by the student justices.

**Middle Year.** The aim of the course of the Middle year is to instruct in the preparation of cases before and after they are filed in court. To this end, statements of fact are given to the members of the class, in accordance with which trial briefs of the law and of the facts are made, and pleadings under the code are drawn. Each member of the class receives from the instructor in charge criticism of the work done. The practice of the court follows closely the practice in the district courts of Kansas. Besides this work, a course of lectures is given on instructions to juries and findings of fact. Members of the class are required to draw instructions and findings under direction of the instructor in charge of the course.

**Senior Year.** The work of this year is partly the continuation of the work of the former two years. In addition, the students are required to prepare all the papers, including a case-made or bill of exceptions necessary to take a case from the lowest to the highest court. Each successive step is criticized and discussed by a member of the Faculty and made to conform to the practice of actual courts in the conduct of a case, from its inception to determination by the court of last resort. The case to be so taken up must be originated by the student himself, thus affording a test of the knowledge of the jurisdiction both of *nisi prius* and appellate courts with respect to different causes of action.

## Expenses.

Each resident student entering the Law School for the first time is required by law to pay a matriculation fee of five dollars. Each Kansas student, in whatever year of the law course he may be, is required by law to pay an incidental fee of twenty-five dollars. Non-residents of Kansas pay a matriculation fee of ten dollars and an incidental fee of thirty-five dollars. Students of the School of Law may divide the payment of the incidental fee between the two terms of the school year. A diploma fee of five dollars is required at graduation.

Many students reduce their living expenses by doing light house-

keeping. Board, room, light and fuel cost from three to five dollars per week. Further information about expenses may be found in connection with the College, in this catalogue.

### Student Organizations.

**Cooley Club.** Meetings of the club occur once each week. Any student of the School of Law is eligible, but the membership is confined at present mainly to the members of the Junior and Middle classes. Legal questions are debated, and to this is added the work of the ordinary literary debating society.

**Kent Club.** The members of the Kent club are, in the main, members of the Senior class, although any student in the School of Law is eligible to membership. The work consists of the discussion of legal, economic and historical questions, and the consideration of legal literature. Debating is a prominent feature of the work of the club.

### The Kansas Lawyer.

This is a monthly publication edited by the students of the School of Law. It is devoted to legal literature and to items of interest to the students and alumni of the school.

### Honors and Prizes.

By resolution, the State Bar Association of Kansas, as a recognition of the School of Law and for the purpose of encouraging its students to work along the line of legal literature, assigns a place on the literary program of the annual meeting at Topeka to that student of the Senior class who prepares the best paper on some legal topic assigned by the Law Faculty. The merits of the papers submitted are passed upon by a committee appointed for the purpose by the association. George J. Benson was given the honor in 1905–'06.

The Edward Thompson Company offers annually a prize of a set of the American and English Encyclopedia of Law for the best thesis on a subject assigned by the Law Faculty. The contest is open to all members of the School of Law. Oliver Q. Claflin won this prize in 1905–'06.

## Debating.

Interstate debates are held each year with Missouri and Iowa. Members of the two Law School clubs are chosen to represent these clubs on the debating squad of the University. This squad receives practical instruction in public speaking and debating from a committee of the general Faculty of the University. Law students

are also eligible to membership in the general literary clubs of the University which are also represented in the debating squad. From this squad the debating teams for the interstate debates are chosen by competition.

## Equipment.

**Green Hall.** A building for the School of Law of the University was completed during the summer of 1905. The building cost $65,000, and is one of the most complete and best-equipped law buildings in the West. It has three floors, devoted to recitation-rooms, offices, library, and rooms for the Law School clubs. The library contains space for about 20,000 volumes, and private study-rooms for students and Faculty open into the reading-room of the library. A large room is set aside for a practice court and the best facilities possible are available for students of the law.

**Libraries.** The law library is composed of upwards of 3000 volumes, for the exclusive use of the students of the School of Law. The library has an excellent equipment of the best law text-books, and new texts are being added constantly. It has also reports of the courts of last resort, both state and federal, as well as Lawyers' Reports Annotated, American Decisions, American Reports, the complete *Reporter* system, and the full reprint of the English cases. Limited space has prevented as rapid growth of the library as desired, and in the new building large additions will be made to the library equipment. In addition to the volumes devoted exclusively to law, the University library of 50,000 volumes is at the disposal of the law students. They thus have at hand the largest and best selected scholarly library in the Southwest. The city library, housed in the Carnegie building, is also open to the students of the School of Law for books of fiction and general literature.

**State Library.** The state library, at Topeka, which is largely a law library, is easily accessible to students upon necessary occasions. Such works as may be found usually in large state libraries will therefore be at the disposal of the members of the Law School at various times during the year.

## Courses of Study.

JUNIOR YEAR.

*First Term* (first half):

Elements of American Jurisprudence, Robinson. Daily, at 10:15. Associate Professor Higgins.

Contracts, Clark. Daily, at 11:15. Professor Green.

Moot Court. The Study of Cases. Once a week. Hours by appointment. Mr. ———.

*First Term* (second half):

Agency, Mechem. Daily, at 10:15. Associate Professor Higgins.

Contracts, Clark. Daily, at 11:15. (Continuation of the work of first half-term.) Professor Green.

Moot Court. Once a week. Mr. ———.

*Second Term* (first half):

Torts, Bigelow. Daily, at 10:15. Mr. ———.

Bailments, Schouler. Daily, at 9. Mr. ———.

Sales, Burdick, and cases. Daily, at 11:15. Professor Burdick.

Moot Court. Once a week. Mr. ———.

*Second Term* (second half):

Damages, ———. Daily, at 9. Mr. ———.

Domestic Relations, Schouler, and lectures. Daily, at 11:15. Professor Burdick.

Moot Court. Once a week. Mr. ———.

MIDDLE YEAR.

*First Term* (first half):

Insurance, Vance. Daily, at 9. Associate Professor Higgins.

Criminal Law, Clark and Marshall, or Bishop. Daily, at 10:15. Professor Burdick.

Practice Court. Once a week. Associate Professor Higgins.

*First Term* (second half):

Common-law Pleading, Perry. Daily, at 11:15. Professor Burdick.

Equity, Eaton. Daily, at 10:15. Professor Burdick.

Practice Court. Once a week. Associate Professor Higgins.

*Second Term* (first half):

Code Pleading, Bryant. Daily, at 8. Associate Professor Higgins.

Equity Pleading, Fletcher. Daily, at 10:15. Professor Burdick.
Practice Court. Daily, by divisions of the class in connection with Code Pleading, at 9, and once a week for the entire class. Associate Professor Higgins.

*Second Term* (second half):
Bills and Notes, Norton. Daily, at 9. Mr. ———.
Evidence, Chase's Stephen's Digest. Daily, at 10:15. Professor Green.
Practice Court. Daily, by divisions, and once a week for the entire class. Associate Professor Higgins.

SENIOR YEAR.

*First Term* (first half):
Real Property, Tiedeman. Daily, at 8. Associate Professor Higgins.
Evidence, Chase's Stephen's Digest. Daily, at 10:15. Professor Green.
Roman Law, Lectures, Justinian Institutes. Daily, at 11:15. Professor Burdick.
Practice Court. Once a week. Professor Burdick.

*First Term* (second half):
Real Property, Tiedeman. Daily, at 8. (Continuation of the work of the first half-term.) Associate Professor Higgins.
Corporations, Clark. Daily, at 10:15. Professor Green.
International Law, Lawrence. Daily, at 9. Mr. ———.
Practice Court. Once a week. Professor Burdick.

*Second Term* (first half):
Constitutional Law, Black. Daily, at 9. Professor Green.
Corporations, Clark. Daily, at 11:15, for four weeks. Professor Green.
Municipal Corporations, ———. Daily, at 11:15, for five weeks. Professor Green.
Practice Court. Once a week. Professor Burdick.

*Second Term* (second half):
Wills and Administrations, Underhill, first volume. Daily, at 9. Associate Professor Higgins.
Partnership, ———. Daily, at 10:15. Associate Professor Higgins.
Constitutional Law, Black. Daily, at 11:15, for four weeks. Professor Green.
Conflict of Laws, Minor. Daily, at 11:15, for five weeks. Professor Green.
Practice Court. Once a week. Professor Burdick.

## Outline of Course of Study

**In the Summer and Regular Sessions.**

SUMMER SESSION OF 1906.—Criminal Law and Torts.

REGULAR SESSION OF 1906–'07.—Insurance, Elements of American Jurisprudence, Contracts, International Law, Equity, Bailments, Equity Pleading, Sales, Damages, Evidence, and Domestic Relations.

SUMMER SESSION OF 1907.—Agency and Bills and Notes.

REGULAR SESSION OF 1907–'08.—Real Property, Evidence, Roman Law, Corporations, Common-law Pleading, Code Pleading, Constitutional Law, Municipal Corporations, Wills, Partnership, and Conflict of Laws.

See, also, courses of law under the Summer Session.

# V. The School of Fine Arts.

## Faculty.

FRANK STRONG, Ph. D., President.

CHARLES S. SKILTON, A. B., Dean. Professor of History of the Fine Arts, Musical Theory, and Organ.

CARL A. PREYER, Professor of Piano, Musical Theory, Counterpoint, Canon, and Fugue.

CHARLES E. HUBACH, Professor of Voice.

WILLIAM A. GRIFFITH, Professor of Drawing and Painting.

ALEXANDER M. WILCOX, Ph. D., Professor of Greek Language and Literature.

CHARLES G. DUNLAP, Litt. D., Professor of English Literature.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

ARVIN S. OLIN, A. M., Professor of Education.

EUGÉNIE GALLOO, A. M., Professor of Romance Languages and Literatures.

BRUCE V. HILL, Ph. D., Acting Professor of Physics.

RAPHAEL D. O'LEARY, A. B., Associate Professor of English.

ELMER F. ENGEL, A. M., Associate Professor of German.

EDGAR G. FRAZIER, Ph. B., Associate Professor of Public Speaking.

ARCHIBALD HOGG, A. B., Assistant Professor of Philosophy.

ALBERTA L. CORBIN, Ph. D., Assistant Professor of German.

MARGARET LYNN, A. M., Assistant Professor of English.

CHARLES H. GRAY, Ph. D., Assistant Professor of English.

MARY C. FISH, Assistant Professor of Physical Education.

HELEN PHIPPS, Instructor in Violin.

HARRIET GREISSINGER, Mus. B., Instructor in Piano.

BLANCHE LYONS, Assistant in Voice.

MAUDE B. COOKE, Assistant in Piano.
MAUD MILLER, Mus. B., Assistant in Piano.
JULIA RIGHTER, Mus. B., Assistant in Piano.
LOUISE WIEDEMANN, Mus. B., Assistant in Piano.
ALICE A. FLINTOM, Mus. B., Assistant in Voice.

## Departments.

The School of Fine Arts is made up of the following departments: (1) Music. (2) Drawing and Painting. (3) Elocution.

## Degrees.

The courses of study in the School of Fine Arts lead to the following degrees:

Master of music.
Bachelor of music.
Bachelor of painting.
Teacher's certificate of completion of two-year course.

## Requirements for Admission.

There are two methods of admission to the School of Fine Arts: First, by examination; second, by certificate.

**By Examination.** All students who cannot present certificates from accredited schools will be examined in the subjects required for entrance. The times and place of examination are set forth on page 73 of this catalogue.

**By Certificate.** Students will be admitted without examination on certificates from high school or other preparatory school, signed by the proper school officer. The general plan is the same as that noted under "The College," on page 74.

### Units Required for Admission.

Eight and one-half units of high-school work are required for full admission to the School of Fine Arts. (See heading "Special Students.") The eight and one-half units must include the following:

Three units in English from group I.
Two and one-half units in mathematics from group II.
One unit in history from group VI.
Two units from any courses remaining, as outlined in the following:

| | SUBJECTS OFFERED. | |
|---|---|---|
| GROUP I, English. | English, four units. | Three units are required. |

| | | |
|---|---|---|
| GROUP II, Mathematics. | Algebra, one and one-half units.<br>Plane geometry, one unit.<br>Solid geometry, one-half unit.<br>Plane trigonometry, one-half unit.<br>Advanced algebra, one-half unit. | The algebra, one and one-half units, and plane geometry, one unit, are required. |
| GROUP III, Foreign Languages. | Latin, four units.<br>Greek, three units.<br>German, three units.<br>French, three units. | All optional, except that students who take German in the University must offer three units of Latin for entrance. |
| GROUP IV, Physical Sciences. | Physical geography, one unit.<br>Physics, one unit.<br>Chemistry, one unit. | All optional. |
| GROUP V, Biological Sciences. | Botany, one unit.<br>Zoölogy, one unit.<br>Physiology, one unit. | All optional. |
| GROUP VI, History. | Greek and Roman, one unit.<br>Mediæval and modern, one unit.<br>English, one unit.<br>American, one unit.<br>Economics, one unit. | One unit is required. |

**Additional Requirements.**

**In Violin.** Applicants must add to the general requirements stated above an ability to play correctly selections from the Wichtl School, book I, and from Kayser, Thirty-six Studies, book I.

**In Piano and Organ.** In addition to the technical requirements, consisting of the major and the harmonic and melodic minor scales, the triad, dominant seventh and diminished seventh arpeggios, candidates will be required to play in tempo, and with correct touch, fingering, and phrasing, selections from the following, or equivalents: Loeschorn, op. 66; Bach's Easy Preludes; Heller, op. 47; Mozart, Sonata in A major.

**In Latin.** All students expecting to take German in the regular course must offer three units of Latin.

### Special Students.

Students need not be deterred from seeking to enter the School of Fine Arts of the University because they cannot satisfy all the requirements for full admission to that school. Those requirements are for persons who are candidates for a degree in music or painting. All persons who desire to pursue a special line of work, without conforming to the requirements for entrance, or following a prescribed course, may apply for admission to the School of Fine Arts as special students. The admission of such persons is under the control of the Dean, to whom they should apply, and whose certificate of acceptance must be presented to the Registrar before registration.

Applicants for standing as special students must present satisfactory evidence of proper preparation for the studies desired. Special students are subject to the same regulations as regular students as to quality of work, attendance at recitations, and examinations.

### Ensemble Playing.

An ensemble class meets for the study of concerted music. Four- and eight-hand piano music is studied. Thus pupils become acquainted with many masterpieces which are often inaccessible to music students, and acquire habits of sight-reading and accompanying, which are invaluable to the musician. Advanced students also have the opportunity of playing concertos with the University Orchestra.

### Clubs.

**The University Orchestra** is an organization of students, directed by the Dean, which gives two concerts each year, and furnishes music for commencement and other occasions.

Classical and popular music is studied. All students who play orchestral instruments with sufficient skill are eligible.

**The Glee Club** is composed of young men, under the direction of the professor of voice training. They give two concerts a year, and make a concert tour of the state.

**Vesper Chorus.** The Vesper Chorus is composed of about thirty of the leading singers of the city and University, and takes part in the monthly vesper services on Sunday afternoon. It is under the direction of the professor of voice training.

**The Mandolin Club** is composed of mandolin, banjo and guitar players, under a leader appointed by the Dean of the School of Fine Arts. It gives two concerts a year, and makes a concert tour.

**The Dramatic Club,** under the direction of the instructor in

elocution, gives a public performance of a modern play each year The club is open to students in this school.

**The Reading Club** is an organization conducted by young women interested in the study of oral expression. The club meets once each week during the college year, and a program of readings, recitations, impersonations and farces is given. Membership is open to all women in the University.

### The Normal Class.

The normal class is designed especially for students fitting themselves for teachers, although all students of the school are required to attend. The work consists of lectures on the methods of teaching; papers and discussions by students; careful study of the systems in use in the school, which, in music, aim equally to combine the melodic and musical elements with that of the technical; the examination of other systems, always with a view of shortening the processes and roads to a high grade of musical execution. Once a month the conference is devoted to a discussion of current events.

### Payment of Tuition.

No student will be accepted for less than a half-term. Students who begin lessons during a half-term must pay tuition for the entire half-term.

The receipt of the treasurer of the School of Fine Arts must be presented to secure enrolment in classes or for private lessons at the beginning of each quarter. No reduction is made for lessons missed except in case of illness, when the School of Fine Arts shares the loss equally with the pupil.

### General.

It is required of all candidates for a degree that two years be spent in residence at the University. During the first two years piano students take one lesson a week from Professor Preyer and one from an assistant, and attend technic class with an assistant; in the third and fourth years all piano lessons are with Professor Preyer. Voice and violin students are required to take piano technic the first two years. The year is divided into four quarters, two quarters in each term.

The school does not furnish pianos for practice at the building, but instruments can be rented in town for from three to five dollars a month, and grand pianofortes at from seven to ten dollars a month. Pianos rented of private parties, or in connection with board, may often be secured at even lower rates. If desired, sev-

eral students may unite in renting an instrument, thus materially reducing the expense.

Students in drawing and painting will be required to furnish their own materials, except easels and drawing-boards.

All art work, when finished, is under the control of the instructors until after the close of the public exhibition of student work, at the end of the academic year.

## Equipment.

**In Music.** The department of music of the University occupies a building of its own--North College. The down-town music studios, in the Dick building, are used by the assistant instructors. The school is well equipped with pianos, including six concert grands; a three-manual pipe-organ, built by King & Sons, of Elmira, N. Y.; charts for sight-reading, for illustrating vocal, pianoforte and lecture courses; about 100 lantern slides for use in connection with lectures in architecture, the graphic arts, and musical history.

**In Drawing and Painting.** The department of drawing and painting offers instruction in free-hand drawing in charcoal, pencil, and pen and ink; painting in oil and water-colors from still life, the living model, and landscape; ornamental design, perspective, and pictorial composition.

**The Studios** are located on the third floor of Snow Hall, and are well equipped with plaster casts from the antique, articles from still life, books and photographs upon the fine and applied arts.

**The Greenhouse** is on the same floor, and here plants are cultivated for the use of the class in ornamental design.

One of the studios can be darkened for a lecture-room. It is equipped with a lantern and several hundred slides.

There is a force-press for the printing of etchings and another for color-printing. The students have the use of these presses for the reproduction of their designs.

The mounted natural-history specimens furnish a great deal of valuable material for the students in painting and motifs for the classes in design.

In the studios there are sixty-five casts, among which will be found the Nike of Samothrace; Venus di Milo; Diana Robing; Augustus Cæsar; Tomb of Lorenzo de Medici, by Michael Angelo; Nike, by Praxiteles; several Panagra figures; three Lions, by Barye; Satyr and Narcissus, from Pompeii; Laughing Faun, in the Louvre; Clytie, from the British Museum; Minerva; Sappho;

Laughing Boy, by Donatello; Maiden of Lilli, attributed to Raphael; Dante; the Unknown Woman, in the Louvre; Washington and Franklin, by Houdon; the large Bacchic Procession, from the Naples museum; Bacchante, from the Villa Albani, Rome; Boys playing on trumpets, by Luca della Robbia; Madonna and child, with two angels, and the Annunciation, by Andrea della Robbia; Cherub playing on double pipe, by Donatello; Nymph, by Jean Goujon; French Peasant, by Carpeaux; the head of Cæsar, from the Trajan column; busts of Brutus, Agrippa, Apollo Belvedere; also, a number of studies of ornament and architectural details.

Pupils will have access to the classical museum, containing a good collection of antique casts—in the round, including the Venus di Milo, the Borghese Warrior, the Emperor Augustus, the Reclining Young Man of the East Pediment of the Parthenon, and the so-called Germanicus; in relief, parts of the frieze of the Parthenon, a part of a Bacchic Procession, three plates in high relief, Metopes of the Parthenon, etc.

Busts of Young Augustus, Niobe, Apollo Belvedere, Clytie, Eros, Homer, Socrates, Cicero, and many of Roman emperors.

Masks of Brutus, Niobe, Laocoon, and Agrippa.

Small full figures of Venus di Milo, Diana Robing, and Narcissus.

Models of the Acropolis of Athens, the Quoit Thrower of Myron, Amazon Antinous, Diana of Gabii, and others; colored charts of Greek and Roman architecture.

Plates.—Seventy colors, by Reinhard, illustrating Roman architecture; 89 plates of forms, painting and decoration of Greek vases; 471 plates illustrating Greek and Roman antiquities; 100 plates illustrative of art mythology; 2000 illustrations of classical monuments; manuscript facsimiles, inscriptions, etc.; phototypes of sculpture and photography.

**The Library.** The University Library contains a good collection of works on art, including art exposition and criticism, musical history, vocal and orchestral scores of operas, symphonies, chamber music, oratorios and cantatas, pianoforte and organ music, and collections of standard merit. This collection is annually increased.

### Concerts and Recitals.

Concerts are frequently given in Recital hall and in University hall by the professors and advanced students. A concert course is arranged for, which affords students an opportunity of hearing many noted musicians, while the nearness of Lawrence to Kansas City and Topeka is taken advantage of when these cities are visited by the great musical artists or opera companies of the day. Special rates are secured for these events.

Recitals are given fortnightly by the students of the school, at which works studied in the classroom are performed before a small audience of fellow students and their friends. Every student is required to attend these recitals and all concerts, and take part in the programs at least twice a year. These semipublic appearances are of great assistance in acquiring the ease and self-possession so essential to a successful public performance.

Towards the end of the College year the University Chorus and the Oratorio Society of Lawrence unite in a musical festival of two days' duration, at which a leading orchestra and noted soloists take part, and several masterpieces of choral and orchestral music are rendered.

### Art Exhibitions.

An exhibition of works of art will be held every year at the University, together with a course of lectures upon subjects relating to the fine arts. Exhibitions of the work of the students are held from time to time.

## Expenses.

By legislative enactment, a matriculation fee of five dollars (to be paid but once) must be charged each student of Kansas entering the School of Fine Arts. Non-residents of Kansas must pay a matriculation fee of ten dollars.

The instructors in the School of Fine Arts receive compensation from the state for only part of the work of the courses, and the remainder must be paid for at rates indicated below.

All bills are payable quarterly in advance.

No fees will be refunded if the student leaves before the end of a half-term. The receipt of the treasurer of the School of Fine Arts must be presented each quarter to secure enrolment in classes or for private lessons. No lessons are given during the week of the semiannual examinations.

Rates for regular students (two half-hour lessons a week):

| | | |
|---|---|---|
| First year | Piano, per quarter | $31 00 |
| | Voice, per quarter | 31 00 |
| | Violin, per quarter | 25 00 |
| | Elocution, per quarter | 31 00 |
| | Drawing and painting, per quarter | 15 00 |
| Second year | Rates the same as for first year. | |
| Third year | Piano, per quarter | $33 50 |
| | Organ, per quarter | 33 50 |
| | Voice, per quarter | 31 00 |
| | Violin, per quarter | 31 00 |
| | Drawing and painting, per quarter | 15 00 |
| Fourth year | Free to Kansas students. For non-residents, the same as for the third year. | |

**Rates for Special Students.**

| | |
|---|---|
| Preliminary years and private lessons with assistants: | |
| Piano, two lessons a week, per quarter | $13 50 |
| " one lesson a week, per quarter | 7 00 |
| Voice, two lessons a week, per quarter | 18 00 |
| " one lesson a week, per quarter | 10 00 |
| Lessons with heads of departments (one-half-hour lessons): | |
| Piano, two lessons a week, per quarter | $28 00 |
| " one lesson a week, per quarter | 16 00 |
| Voice, two lessons a week, per quarter | 28 00 |
| " one lesson a week, per quarter | 16 00 |
| Organ, two lessons a week, per quarter | 28 00 |
| " one lesson a week, per quarter | 16 00 |
| Violin, two lessons a week, per quarter | 24 00 |
| " one lesson a week, per quarter | 12 00 |
| Harmony, counterpoint, composition, instrumentation— | |
| Per quarter | 28 00 |
| In class | 10 00 |
| Elocution, two lessons a week, per quarter | 28 00 |
| " one lesson a week, per quarter | 16 00 |
| Three lessons a week (hour lessons): | |
| Painting, in class | 15 00 |
| Drawing, Saturday class, eighteen weeks | 7 50 |
| Physical education, private | 25 00 |
| " " in class | 5 00 |

**Other Expenses.** There are no dormitories connected with the University. Students find accommodations in the boarding-houses and homes of Lawrence. Information concerning the location of rooming- and boarding-places may be had at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at $4 a week. Some persons who furnish plain rooms and good, plain food receive students at $3 a week. Day board in private families and at city restaurants may be obtained for $2.75 to $4 a week. Day board in clubs varies from $2.50 to $3 a week. Furnished rooms, usually occupied by two students, range from $4 to $15 a month. Unfurnished rooms rent for $1.50 to $3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can attend the University for very little cost in money.

## What the School of Fine Arts Offers.

### In Music.

Instruction in piano, organ and violin playing, and in singing.

Opportunities for performing in public at small recitals and large concerts.

Opportunities for hearing frequent concerts of all kinds of music and many noted artists.

Opportunities for taking part in practice of an orchestra.

A complete knowledge of the theory and history of music.

Training in methods of teaching.

Contact with the life of a large university.

Access to a large musical library.

PIANO STUDENTS are trained not only in solo playing, but in duets, duos, quartets, and ensemble playing with orchestral instruments. Advanced players have the opportunity of playing concertos with the University Orchestra. A special course of piano recitals is given each year for the benefit of piano students.

ORGAN STUDENTS have the opportunity of practicing on the three-manual electric pipe-organ in University Hall. Students can also arrange to practice on the organ of the church which they attend. Nearly all of the church organs in Lawrence are played by former students of this department, and advanced players will find no difficulty in securing positions.

VIOLIN STUDENTS, when sufficiently advanced, receive training in ensemble playing with piano, 'cello, and other instruments, and are admitted to the University Orchestra. Advanced students receive instruction in conducting the orchestra.

VOICE STUDENTS, aside from their solo work, have the opportunity of singing in the church choirs of the city, in the University Glee Club, Vesper Chorus, and Festival Chorus. Each year the musical people of the University give a public performance of an opera.

THEORY STUDENTS receive a complete training in the art of composition in all the different forms of music, and have the opportunity of hearing their compositions performed, when they are of sufficient merit.

ALL STUDENTS can attend the large concerts at Topeka and Kansas City, where such artists as Schumann-Heink, Malek, Walter Damrosch and others are frequently heard. The spring festival at

Lawrence is an important feature of the musical life of the state A chorus of 100 voices, an orchestra of national reputation, and noted soloists render several of the great masterpieces of choral and orchestral music, an opportunity which comes seldom to music students outside of the largest cities.

### In Drawing and Painting.

DRAWING.—In the studios of the drawing and painting department there are sixty-five casts from antique and modern sculpture. From these pupils make drawings until they are able to draw from the

LIVING MODEL.—For advanced pupils a model poses every day throughout the year. As soon as pupils can draw from a plaster cast, one-half their time is spent

PAINTING with oil- or water-colors from still-life objects, then from the living model until spring, when the whole class is taken out of doors to paint

LANDSCAPES, for which there is ample material near the University, as the country surrounding Lawrence is very picturesque. The pupils who study drawing for the purpose of

ILLUSTRATING do the same work as the others, with the exception that pen and ink are used in place of colors. Every year there is held at the University, under the direction of the department of drawing and painting, an

EXHIBITION of works of art. Last year the exhibition consisted of Tissot's Old Testament, 496 paintings in all. The library, containing several hundred books upon the fine arts, is annually increased, and lectures upon some subject relating to the fine arts are given throughout the year.

### In Elocution.

SHAKSPERE AND THE MODERN DRAMA. Students in the department of elocution have opportunity throughout the year to hear numerous performances of Shakspere and the modern drama as interpreted by well-known actors and actresses.

THE UNIVERSITY DRAMATIC CLUB, open to students of the University, gives two plays during the year, and offers opportunity for the practical study of the technique of acting. The following plays have been given by the club: 1901–'02, "Shore Acres," by James Herne; 1902–'03, "A Night Off," by Augustine Daly; 1903, "Alabama," by Augustus Thomas; 1904, "Rosemary," by Lewis N. Parker and Murray Carson; 1905, "Comforts of Home," by Wm. Gillette; 1906, "An American Citizen," by Mary Lucetta Riley.

THE ANNUAL FARCE, given by the students of the Junior class, on the evening of the Junior promenade.

THE SENIOR PLAY, written by the class-play committee, and given as one of the features of commencement week.

THE READING CLUB, an organization of young women interested in the study of elocution. Weekly programs are given in which each member has a reading, recitation, impersonation, or takes part in a short play or scene from the drama.

THE LITERARY SOCIETIES and DEBATING CLUBS give abundant opportunity for speaking before audiences.

INTERCOLLEGIATE DEBATES are open for contestants from any department of the University.

PUBLIC RECITALS are given from time to time in University hall by the class in elocution.

NOTED SPEAKERS at the Friday morning chapel exercises and on other occasions give students an opportunity to observe and determine for themselves the qualities of successful public speaking.

# Specimen Graduating Programs.

## In Piano.

*Gottschalk,* . . . . . Tremulo.
*Chopin,* . . . . . Etude, Op. 10, No. 5.

Vocal selection.

*Preyer,* . . . . . Andante and Intermezzo from Op. 31.
*Wieniawski,* . . . . . Waltz in D flat.

Vocal selection.

*MacDowell,* . . . . . Witches' Dance.
*Chopin,* . . . . . Polonaise in A flat major.

Vocal selection.

*Mendelssohn,* . . . . . Capriccio in B minor.
With accompaniment of the University Orchestra.

## In Organ.

*Bach,* . . . . . Toccata and Fugue in D minor.

Vocal selection.

*Mendelssohn,* . . . . . Sonata in C minor.
Grave.
Adagio.
Allegro maestoso e vivace.
Fuga allegro, moderato.

Vocal selection.

*Buck,* . . . . . Variations on a Scotch Air.

Vocal selection.

*Kinder,* . . . . . Berceuse.
*Thomas,* . . . . . "Mignon" Gavotte.
*Lemmens,* . . . . . Pontifical March.

# Specimen Graduating Programs.

## In Voice.

*Mascagni,* . . . . . "Intermezzo," from Cavalleria Rusticana. For violin, piano, and organ.

*Rossini,* . . . . . "Una Voce Poco fa." Cavatina from the "Barber of Seville."

*Morlachi,* . . . . . "Agnus Dei," from Sixth Mass.

*Wagner,* . . . . . "Elizabeth's Prayer," from Tannhauser.

*De Beriot,* . . . . . Scene de Ballet, for violin.

*Schubert,* . . . . . Auf dem Wasser zu Singen.

*Schumann,* . . . . . Widmung.

*Brahms,* . . . . . Minnelied.

*Tours,* . . . . . Melodie Religieuse.

*Cantor,* . . . . . "As the Dawn."

*Meyerbeer,* . . . . . "Roberta, o tu che adoro." Air from Roberto il Diavolo.

## In Violin.

*Handel,* . . . . . Sonata in A major.

*Keler Bela,* . . . . . Hungarian Idyl.

Vocal selection.

*Mendelssohn,* . . . . . Andante and finale of Concert.

Vocal selection.

*Bohm,* . . . . . Cavatina.

*Pierne,* . . . . . Serenade.

*Wieniawski,* . . . . . Kujawiak Mazurka.

Vocal selection.

*Haydn,* . . . . . Trio in G major.

# Courses of Study.

## Pianoforte.

**Leading to the Degree of Bachelor of Music.**

FRESHMAN YEAR.

*First Term:*

Piano 1, twice a week, by appointment. Professor Preyer and assistant.

Technic (Piano 5), once a week, by appointment. Assistants.

Harmony (Musical Theory 1), Tuesday and Friday, at 2:30. Professor Skilton.

Rhetoric 1, two hours a week. Assistant Professors Bryant and Gray.

English Literature 1, three hours a week. Associate Professor Whitcomb, Assistant Pofessors Bryant and Gray.

Physical Education 1, once a week, by appointment. Assistant Professor Fish.

Normal Class, Wednesday, at 4. Professor Skilton.

History of Music, Thursday, at 4. Professor Skilton.

Recitals and Ensemble Playing.

*Second Term:*

Piano 1, twice a week, by appointment. Professor Preyer and assistant.

Technic (Piano 5), Wednesday, at 3:30. Assistants.

Harmony (Musical Theory 1), Tuesday and Friday, at 2:30. Professor Skilton.

Rhetoric 2, three hours a week. Assistant Professors Bryant and Gray.

English Literature 2, two hours a week. Associate Professor Whitcomb, Assistant Professors Bryant and Gray.

Physical Education 2, once a week, by appointment. Assistant Professor Fish.

Normal Class, Wednesday, at 4. Professor Hubach.

History of Music, Thursday, at 4. Professor Skilton.

Recitals and Ensemble Playing.

SOPHOMORE YEAR.

*First Term:*

Piano 2, twice a week, by appointment. Professor Preyer and assistant.

Technic, once a week, by appointment.

Harmony (Musical Theory 2), Tuesday and Friday, at 3:30. Professor Skilton.

Physical Education 3, once a week, by appointment. Assistant Professor Fish.

English Literature 3, three hours a week. Associate Professor Whitcomb.

Normal Class, Wednesday, at 4. Professor Skilton.

History of Music, Thursday, at 4. Professor Skilton.

Recitals and Ensemble Playing.

One forensic.

One of the following optionals may be taken (private lessons subject to fees):

Vocal Culture 1, twice a week, with Italian 1, twice a week, by appointment. Professor Hubach.

Free-hand Drawing (Drawing and Painting 1), Monday, Wednesday, and Friday, 9 to 12:15, or 1:30 to 4:30. Professor Griffith.

Elocution 2, two times a week. Associate Professor Frazier.

German 1, daily, at 8, 9, 11:15, or 2:30. Associate Professor Engel and Assistant Professor Corbin.

French 1, daily, at 8, 9, 11:15, or 2:30. Assistant Professors Le Duc, Neuenschwander, or Vaughan.

*Second Term:*

Piano 2, twice a week, by appointment. Professor Preyer and assistant.

Musical Analysis (Musical Theory 3), Tuesday and Friday, at 3:30. Professor Skilton.

Physical Education 4, once a week, by appointment. Assistant Professor Fish.

One two-hour course in English Literature.

Normal Class, Wednesday, at 4. Professor Hubach.

History of Music, Thursday, at 4. Professor Skilton.

Recitals and Ensemble Playing.

One forensic.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1, twice a week, with Italian 1, twice a week, by appointment. Professor Hubach.

Free-hand Drawing (Drawing and Painting 1), Monday, Wednesday, and Friday, at 9 to 12:15, or 1:30 to 4:30. Professor Griffith.

Elocution 2, two times a week. Associate Professor Frazier.

German 2, daily, at 8, 9, 11:15, or 2:30. Associate Professor Engel and Assistant Professor Corbin.

French 2, daily, at 8, 9, 11:15, or 2:30. Assistant Professors Le Duc, Neuenschwander, or Vaughan.

JUNIOR YEAR.

*First Term:*

Piano 3, twice a week, by appointment. Professor Preyer.

Composition (Musical Theory 5), Monday, at 3. Professor Preyer.

Counterpoint (Musical Theory 4), Thursday, at 3. Professor Preyer.

History of Music, Thursday, at 4. Professor Skilton.

English Language 3 or 5, Monday, Wednesday, and Friday, at 8. Associate Professor O'Leary or Assistant Professor Sisson.

Normal Class, Wednesday, at 4. Professor Hubach.

Acoustics and Optics (Physics 11), by appointment. Professor Blake.

Recitals and Ensemble Playing.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1 or 2, twice a week, by appointment. Professor Hubach.

Drawing and Painting 1 or 2. Professor Griffith.

Elocution 2, two times a week. Associate Professor Frazier.

German 1 or 3, daily. Associate Professor Engel and Assistant Professor Corbin.

French 1 or 3, daily. Assistant Professor Le Duc.

Education 1, daily, at 3:30. Professor Olin.

*Second Term:*

Piano 3, twice a week, by appointment. Professor Preyer.

History of Music, Thursday, at 4. Professor Skilton.

Composition (Musical Theory 6), Monday, at 3. Professor Preyer.

Counterpoint (Musical Theory 4), Thursday, at 3. Professor Preyer.

Acoustics.

English Language 4 or 6. Associate Professor O'Leary or Assistant Professor Sisson.

Normal Class, Wednesday, at 4. Professor Hubach.

Recitals and Ensemble Playing.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1 or 2, twice a week, by appointment. Professor Hubach.

Drawing and Painting 1 or 2. Professor Griffith.
German 2 or 4, daily. Associate Professor Engel and Assistant Professor Corbin.
French 2 or 4, daily. Assistant Professor Le Duc.
Education 1, daily, at 3:30. Professor Olin.
Elocution, two times a week. Associate Professor Frazier.

SENIOR YEAR.

*First Term:*

Piano 4, twice a week, by appointment. Professor Preyer.
Composition (Musical Theory 6), Wednesday, at 2:30. Professor Preyer.
Counterpoint (Musical Theory 7), once a week, by appointment. Professor Preyer.
Recitals and Ensemble Playing.
Two forensics, or graduating thesis.

*Second Term:*

Piano 4, twice a week, by appointment. Professor Preyer.
Instrumentation (Musical Theory 9), once a week, Wednesday, at 3. Professor Skilton..
Canon and Fugue (Musical Theory 7), once a week. Professor Preyer.
Two forensics, or graduating thesis.

GRADUATE COURSE.

Piano 6, a graduate course, is offered in pianoforte, leading to the degree of master of music (M. M.) The course is open only to graduates of the artists' course who have taken Senior composition work, and to graduates of other schools who have done a corresponding amount of work. In all cases an entrance examination will be insisted upon in both piano and musical composition. The examination will consist of the technic, studies, concertos, etc., and the composition work required for the completion of the Senior year, outlined above; and furthermore, grade I will be required of all applicants. A pianoforte recital is required upon completion of the course and the performance of an original composition is one of the larger forms.

## Organ.

**Leading to the Degree of Bachelor of Music.**

Two years' course, open to those who have completed the work of the Sophomore year.

JUNIOR YEAR.

*First Term:*

Organ 1, twice a week, by appointment. Professor Skilton.
Composition (Musical Theory 5), Monday, at 3. Professor Preyer.
Counterpoint (Musical Theory 5), Thursday, at 3. Professor Preyer.
History of Music, Thursday, at 4. Professor Skilton.
English Language 3 or 5, Monday, Wednesday, and Friday, at 8. Associate Professor O'Leary or Assistant Professor Sisson.
Acoustics and Optics (Physics 11), by appointment. Professor Blake.
Normal Class, Wednesday, at 4. Professor Skilton.
Recitals and Ensemble Playing.

One the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1 or 2, by appointment. Professor Hubach.
German 1 or 3, daily. Associate Professor Engel and Assistant Professor Corbin.
French 1 or 3, daily. Assistant Professor Le Duc.
Drawing and Painting 1 or 2. Professor Griffith.
Elocution, two times a week. Associate Professor Frazier.

*Second Term:*

Organ 1, twice a week, by appointment. Professor Skilton.
Composition (Musical Theory 6), Monday, at 3:30. Professor Preyer.
Counterpoint (Musical Theory 4), Tuesday, at 3:30. Professor Preyer.
History of Music, Thursday, at 4. Professor Skilton.
English Language 4 or 6. Associate Professor O'Leary or Assistant Professor Sisson.
Normal Class, Wednesday, at 4. Professor Hubach.
Recitals and Ensemble Playing.

One of the following optionals may be taken (private lessons are subject to fees):

Vocal Culture 1 or 2, by appointment. Professor Hubach.
Drawing and Painting 1 or 2. Professor Griffith.

Elocution, two times a week. Associate Professor Frazier.
German 2 or 4, daily. Associate Professor Engel and Assistant Professor Corbin.
French 2 or 4, daily. Assistant Professor Le Duc.

SENIOR YEAR.

*First Term:*

Organ 2, twice a week, by appointment. Professor Skilton.
Composition (Musical Theory 4), Wednesday, at 2:30. Professor Preyer.
Counterpoint (Musical Theory 7), Wednesday at 9. Professor Preyer.
Church Music, once a week. Professor Skilton.
Recitals and Ensemble Playing.
Two forensics, or graduating thesis.

*Second Term:*

Organ 2, twice a week, by appointment. Professor Skilton.
Instrumentation (Musical Theory 8), Wednesday, at 3. Professor Skilton.
Counterpoint (Musical Theory 7), Wednesday, at 9. Professor Preyer.
Two forensics, or graduating thesis.

## Violin.

**Leading to the Degree of Bachelor of Music.**

This course is the same as the four-year course in piano, except that violin 1, 2, 3 and 4 take the place of piano 1, 2, 3, 4, and 6. Piano 5 is required.

## Vocal Culture.

**Leading to the Degree of Bachelor of Music.**

FRESHMAN YEAR.

*First Term:*

Vocal Culture 1, twice a week, by appointment. Professor Hubach.
Harmony (Musical Theory 1), Tuesday and Friday, at 2:30. Professor Skilton.
Rhetoric 1, two hours a week. Assistant Professors Bryant and Gray.
English Literature 1, three hours a week. Associate Professor Whitcomb, Assistant Professors Bryant and Gray.
Italian 1, twice a week, by appointment. Assistant Professor Vaughan.

Physical Education 1, once a week. Assistant Professor Fish.
Normal Class, Wednesday, at 4. Professor Skilton.
History of Music, Thursday, at 4. Professor Skilton.
Recitals.

*Second Term:*

Vocal Culture 1, twice a week, by appointment. Professor Hubach.
Harmony (Musical Theory 1), Tuesday and Friday, at 2:30. Professor Skilton.
Rhetoric 1, three hours a week. Assistant Professors Bryant and Gray.
English Literature 2, two hours a week. Associate Professor Whitcomb, Assistant Professors Bryant and Gray.
Italian 1, twice a week, by appointment. Assistant Professor Vaughan.
Physical Education 2, once a week. Assistant Professor Fish.
Normal Class, Wednesday, at 4. Professor Hubach.
History of Music, Thursday, at 4. Professor Skilton.
Recitals.

SOPHOMORE YEAR

*First Term:*

Vocal Culture 2, twice a week, by appointment. Professor Hubach.
Harmony (Musical Theory 2), Tuesday and Friday, at 3:30. Professor Skilton.
English Literature 3, three hours a week. Associate Professor Whitcomb.
Physical Education 3, once a week. Assistant Professor Fish.
Normal Class, Wednesday, at 4. Professor Skilton.
History of Music, Thursday, at 4. Professor Skilton.
Recitals.
One forensic.
One of the following optionals may be taken (private lessons are subject to fees):
Piano 1, twice a week. Professor Preyer.
Free-hand drawing (Drawing and Painting 1), Monday, Wednesday, and Friday, 9 to 12:15, or 1:30 to 4:30. Professor Griffith.
Elocution 2, two times a week. Associate Professor Frazier.
German 1, daily, at 8, 9, 11:15, or 2:30. Associate Professor Engel and Assistant Professor Corbin.
French 1, daily, at 8, 9, 11:15, or 2:30. Assistant Professors Le Duc, Neuenschwander, or Vaughan.

*Second Term:*

Vocal Culture 2, twice a week, by appointment. Professor Hubach.

Musical Analysis (Musical Theory 3), Tuesday and Friday, at 3:30. Professor Skilton.

Physical Education 4, once a week. Assistant Professor Fish.

Normal Class, Wednesday, at 4. Professor Hubach.

History of Music, Thursday, at 4. Professor Skilton.

One two-hour course in English Literature.

Recitals.

One forensic.

One of the following optionals may be taken (private lessons are subject to fees):

Piano 1, twice a week, by appointment. Professor Preyer.

Free-hand Drawing (Drawing and Painting 1), Monday, Wednesday, and Friday, 9 to 12:15, or 1:30 to 4:30. Professor Griffith.

Elocution 4, two times a week. Associate Professor Frazier.

German 2, daily, at 8, 9, 11:15, or 2:30. Associate Professor Engel and Assistant Professor Corbin.

French 2, daily, at 8, 9, 11:15, or 2:30. Assistant Professors Le Duc, Neuenschwander, or Vaughan.

JUNIOR YEAR.

*First Term:*

Vocal Culture 3, twice a week, by appointment. Professor Hubach.

Composition (Musical Theory 5), Monday, at 3. Professor Preyer.

Counterpoint (Musical Theory 4), Thursday, at 3. Professor Preyer.

History of Music, Thursday, at 4. Professor Skilton.

English Language 3 or 5, Monday, Wednesday, and Friday, at 8. Associate Professor O'Leary or Assistant Professor Sisson.

Acoustics and Optics (Physics 11), by appointment. Professor Blake.

Normal Class, Wednesday, at 4. Professor Skilton.

One of the following optionals may be taken (private lessons are subject to fees):

Piano 1 or 2, twice a week, by appointment. Professor Preyer.

Drawing and Painting 1 or 3. Professor Griffith.

Elocution, two times a week. Associate Professor Frazier.

German 1 or 3, daily. Associate Professor Engel and Assistant Professor Corbin.

French 1 or 3, daily. Assistant Professor Le Duc.

*Second Term:*

Vocal Culture 3, twice a week, by appointment. Professor Hubach.

Composition (Musical Theory 6), Monday, at 3:30. Professor Preyer.

Counterpoint (Musical Theory 4), Thursday, at 3:30. Professor Preyer.

History of Music, Thursday, at 4. Professor Skilton.

Normal Class, Wednesday, at 4. Professor Hubach.

English Language 4 or 6. Associate Professor O'Leary and Assistant Professor Sisson.

One of the following optionals may be taken (private lessons are subject to fees):

Piano 1 or 2, twice a week, by appointment. Professor Preyer.

Drawing and Painting 1 or 2. Professor Griffith.

Elocution, two times a week. Associate Professor Frazier.

German 2 or 4, daily. Associate Professor Engel and Assistant Professor Corbin.

French 2 or 4, daily. Assistant Professor Le Duc.

SENIOR YEAR.

*First Term:*

Vocal Culture 4, twice a week, by appointment. Professor Hubach.

Composition (Musical Theory 6), Wednesday, at 3:30. Professor Preyer.

Counterpoint (Musical Theory 7), Tuesday, at 3:30. Professor Preyer.

Two forensics, or graduating thesis.

*Second Term:*

Vocal Culture 4, twice a week, by appointment. Professor Hubach.

Instrumentation (Musical Theory 8), Wednesday, at 3. Professor Skilton.

Opera, once a week. Professor Hubach.

Dramatic Action, twice a week, by appointment. Associate Professor Frazier.

Two forensics, or graduating thesis.

## Drawing and Painting.

**Leading to the Degree of Bachelor of Painting.**

FRESHMAN YEAR.

Drawing (Drawing and Painting 1), Monday, Wednesday, and Friday, 1:30 to 4:30, throughout the year. Professor Griffith.

Painting (Drawing and Painting 6), daily, 1:30 to 4:30, 2d term. Professor Griffith.

English Literature 1 and 2, alternating with Rhetoric 1 and 2, throughout the year. Associate Professor Whitcomb, Assistant Professors Bryant and Gray.

Composition (Drawing and Painting 9), Tuesday, at 1:30, throughout the year. Professor Griffith.

Perspective (Drawing and Painting 10), Thursday, at 1:30, throughout the year. Professor Griffith.

Physical Education 1 and 2, twice a week, throughout the year. Assistant Professor Fish.

SOPHOMORE YEAR.

Drawing (Drawing and Painting 2), 1st term, and 2d term, (*a*), daily, 1:30 to 4:30. Professor Griffith.

Drawing (Drawing and Painting 3 and 4), Monday, Wednesday, and Friday, 1:30 to 4:30, throughout the year. Professor Griffith.

Ornamental Design (Drawing and Painting 12), Monday, at 4:30, throughout the year. Professor Griffith.

Composition (Drawing and Painting 9), Tuesday, at 1:30, throughout the year. Professor Griffith.

English Literature 3, 1st term, three hours a week. Associate Professor Whitcomb.

One two-hour course in English Literature, 2d term.

Optional: French 1 and 2, German 1 and 2.

Two forensics, 1st and 2d terms.

JUNIOR YEAR.

Painting (Drawing and Painting 7), 1st term and 2d term, daily, 1:30 to 4:30. Professor Griffith.

Painting (Drawing and Painting 8), 2d term, daily, 1:30 to 4:30. Professor Griffith.

Ornamental Design (Drawing and Painting 13), Thursday, at 4:30, throughout the year. Professor Griffith.

Composition (Drawing and Painting 9), Tuesday, at 1:30, throughout the year. Professor Griffith.

History of Greek Art (Greek 17), 2d term, daily, at 11:15. Professor Wilcox.

English Rhetoric 3 or 5 and 4 or 6, 1st and 2d terms, Monday, Wednesday, and Friday, at 8. Associate Professor O'Leary and Assistant Professor Sisson.

Acoustics and Optics (Physics 11), 2d term, by appointment. Professor Blake.

Optional: French 1 and 2, or 3 and 4; German 1 and 2, or 3 and 4.

Two forensics, 2d term.

SENIOR YEAR.

Painting (Drawing and Painting 7), 1st term and 2d term, daily, 1:30 to 4:30. Professor Griffith.

Painting (Drawing and Painting 8), 2d term, daily, 1:30 to 5:30. Professor Griffith.

History of Ornament (Drawing and Painting 13), Thursday, at 4:30, throughout the year. Professor Griffith.

Composition (Drawing and Painting 9), Tuesday, at 1:30, throughout the year. Professor Griffith.

Modern Art (History of the Fine Arts 3), 2d term, Monday and Thursday, at 2:30. Professor Griffith.

Four forensics, or graduating thesis.

Graduating painting.

## Elocution.

**Two-year Collegiate Course.**

Students who so desire may specialize throughout the course along the line of oratory, debate, and extempore speaking. A certificate is given upon completion of the two-year collegiate course.

JUNIOR YEAR.

*First Term:*

Principles of Vocal Expression (Elocution 1), two hours a week, by appointment. Associate Professor Frazier.

American Prose and Poetry (Elocution 2), two hours a week, by appointment. Associate Professor Frazier.

Rhetoric 1, twice a week. Assistant Professors Bryant and Gray.

English Literature 1, three times a week. Associate Professor Whitcomb, Assistant Professors Bryant and Gray.

One optional course may be chosen from the College, upon consent of the instructor.

*Second Term:*

Lecturing and Reading (Elocution 3), two hours a week, by appointment. Associate Professor Frazier.

English Prose and Poetry (Elocution 4), two hours a week, by appointment. Associate Professor Frazier.

Rhetoric 2, three times a week. Assistant Professors Bryant and Gray.

English Literature 2, twice a week. Associate Professor Whitcomb, Assistant Professors Bryant and Gray.

One optional course may be chosen from the College, upon the consent of the instructor.

SENIOR YEAR.

*First Term:*

The Modern Drama (Elocution 5), two hours a week, by appointment. Associate Professor Frazier.

Platform Work (Elocution 6), two hours a week, by appointment. Associate Professor Frazier.

Rhetoric 3, daily, at 8. Associate Professor O'Leary and assistants.

Public Speaking 1, daily, at 1:30. Associate Professor Frazier and assistants.

*Second Term:*

Methods of Teaching Reading (Elocution 7), two hours a week, by appointment. Associate Professor Frazier.

Shakspere (Elocution 8), two hours a week, by appointment. Associate Professor Frazier.

Logic and Psychology, daily, at 8. Assistant Professor Hogg.

English Literature 5, daily, at 10:15. Professor Dunlap.

Graduating recital.

## Two-year Collegiate Courses.

These courses (identical with the work of the first and second years of the four-year collegiate courses outlined above) are intended for those students who feel that their time is limited. They are especially designed for teachers. A certificate is given upon completion of one of these courses.

## Artists' Courses

**In Piano, Voice, Violin, Organ, or Musical Composition.**

These courses are the same as the four-year collegiate courses in these subjects, requiring for graduation a graduating recital or a program of original musical compositions, or a combination of both.

For entrance and continuation in these courses the highest grade will be required in all examinations in piano, voice, organ, violin, or composition.

## Normal Course

**In Public-school Music and Singing at Sight.**

This work consists of the Freshman year of the four-year course in vocal culture, together with vocal culture 6 and 7, upon the completion of which a teacher's certificate is given.

# Courses of Instruction.

## DRAWING AND PAINTING.

Professor GRIFFITH.

All courses except 5 are required of students of drawing and painting and are open to other students of the School of Fine Arts who are prepared for them.

1.—FREE-HAND DRAWING. Free-hand drawing in charcoal, from the cast. The method of instruction aims to teach the student to construct form in a simple and correct manner. Freshman, throughout the year, Monday, Wednesday, and Friday, 1:30 to 4:30. Professor Griffith.

2.—FREE-HAND DRAWING. Free-hand drawing in charcoal, from life. Designed to give firm construction in drawing and training in grasping the essential character of the model. Sophomore, 1st term, and 2d term, (*a*), Monday, Wednesday, and Friday, 1:30 to 4:30. Professor Griffith.

3.—FREE-HAND DRAWING. Free-hand drawing in pen and ink, from cast and still life. The technique of pen drawing for reproduction. Sophomore, 1st term, daily, 1:30 to 4:30. Professor Griffith.

4.—FREE-HAND DRAWING. Free-hand drawing with water-colors. Wash-drawing for reproduction by the half-tone process. Sophomore, 2d term, daily, 1:30 to 4:30. Professor Griffith.

5.—DRAWING. This course aims to meet the needs of two classes of students: Students who wish training in artistic preparation and graphic expression, for its general culture value; and technical students, to whom some drawing is essential. It consists of the first eighteen weeks' work, covered by courses 1, 3, 9, and 10, three hours daily.

6.—PAINTING. Painting with water-color, oil, or pastille, from still life. Students begin the study of color in this class. The observation and reproduction of simple masses of form and color. Freshman, 2d term; Sophomore, 1st term and 2d term; daily, 1:30 to 4:30. Professor Griffith.

7.—PAINTING. Painting with water-color, oil, or pastille, from life. Portrait painting is the object of the instruction given in this

class. Junior and Senior, 1st and 2d terms, daily, 1:30 to 4:30. Professor Griffith.

8.—PAINTING. Painting of landscape and human figures in the open air. Junior and Senior, 2d term, daily, 1:30 to 5: 30. Professor Griffith.

9.—COMPOSITION. Throughout the entire course every student is required to study the pictorial compositions of the masters, and each week to make one original composition upon a given subject. Tuesday, at 1:30. Professor Griffith.

10.—PERSPECTIVE. Elementary perspective, shadows, and reflections. Freshman, 1st term, Thursday, at 1:30. Professor Griffith.

11.—PERSPECTIVE. Advanced perspective; the application of the principles of perspective to pictorial purposes. Freshman, 2d term, Thursday, at 1:30. Professor Griffith.

12.—ORNAMENTAL DESIGN. The anatomy of pattern. Sophomore, 1st term, (*a*), Wednesday, 4:30 to 5:30. The planning of ornament. Sophomore, 1st term, (*b*), and 2d term, at 11:15. Professor Griffith.

13.—ORNAMENTAL DESIGN. The application of ornament. Junior, 1st and 2d terms, Monday, 4:30 to 5:30. The history of ornament. Senior, 1st and 2d terms, Thursday, at 11:15. Professor Griffith.

## EDUCATION.

1.—THE HISTORY OF EDUCATION. A survey of both ancient and modern periods. Studies of typical movements in education, the development of national systems, and the work of great educators. 1st and 2d terms, Monday, Wednesday, and Friday, at 3:30. Professor Olin.

## ELOCUTION.

**Associate Professor FRAZIER.**

**Courses 1 to 8 are arranged to cover two years of consecutive work in the University. The first four courses should be taken the first year; the four remaining courses the second year. Course 9 is for special students only.**

1.—PRINCIPLES OF VOCAL EXPRESSION. Purpose in utterance; types of utterance—formulative, discriminative, emotional, and volitional. Study of grouping. Text, Chamberlain and Clark. Two hours a week, by appointment. Associate Professor Frazier.

2.—AMERICAN PROSE AND POETRY. The critical analysis and study for purpose of oral interpretation of some of the standard

poem and prose compositions of American authors. Two hours a week, by appointment. Associate Professor Frazier.

3.—LECTURING AND READING. Training in the use of the manuscript in the presentation of original compositions. Practice in formulating, outlining and preparing papers and informal talks for various occasions. Suggestions for reading articles other than one's own. Two hours a week, by appointment. Associate Professor Frazier.

4.—ENGLISH PROSE AND POETRY. A study of a limited number of representative English poems and prose compositions from the standpoint of their vocal interpretation. Two hours a week, by appointment. Associate Professor Frazier.

5.—THE MODERN DRAMA. Students in this course will be given training in dramatic constructions and opportunity to study in some detail the theory of stage business in the presentation of modern plays. Two hours a week, by appointment. Associate Professor Frazier.

6.—PLATFORM WORK. Particular preparation for public reading, lecturing, and impersonation. Each student will arrange and present in public an entire program. Two hours a week, by appointment. Associate Professor Frazier.

7.—SHAKSPERE. One comedy and one tragedy will be studied and the student will be required to memorize some of the more important scenes and to impersonate the various characters. Two hours a week, by appointment. Associate Professor Frazier.

8.—METHODS OF TEACHING READING. The aims of this course are: (1) To present a brief review of past elocutionary methods; (2) to lay out a definite and graded method of expressional developments; and (3) to give the student opportunity to teach under the direction of the instructor. Two hours a week, by appointment. Associate Professor Frazier.

9.—SPECIAL CONFERENCES. The object of this course is to give a student an opportunity to enroll for special work in oral expression without becoming a regular student in the school. Hours by appointment. Associate Professor Frazier.

## ENGLISH LANGUAGE AND LITERATURE.

1.—ENGLISH LITERATURE. General history, supplemented with class study of representative authors and with required library reading. Text-books, Pancoast's Introduction to English Literature and Pancoast's Standard English Poems. Required of all

**Freshmen in the School of Fine Arts. 1st or 2d terms: 1st term, three hours, Monday, Wednesday, and Friday, at 8, 9, 10:15, 11:15, 3:30, and 4:30; 2d term, two hours, Tuesday and Thursday, at 8, 9, 10:15, 11:15, 2:30, and 3:30. Associate Professor Whitcomb and Assistant Professors Bryant and Gray.**

**2.—English Literature.** (*a*) English literature of the eighteenth century. Text book, Gosse's History of Eighteenth Century Literature. Lectures, discussions, essays, and collateral library work. (*b*) An elementary course in English poetry. Text-book, Pancoast's Standard English Poems. Lectures, reports, and collateral library work. Required of all Sophomores in the School of Fine Arts. 1st or 2d terms, three hours, Monday, Wednesday, and Friday: 1st term, at 2:30; 2d term, at 8, 10:15, 11:15, and 2:30. Associate Professor Whitcomb and Assistant Professor Lynn.

**3.—Rhetoric and English Composition.** Outlines of rhetoric, with exercises and themes. Required of all Freshmen in the School of Fine Arts. Two hours, Tuesday and Thursday: 1st term, at 8, 9, 10:15, 11:15, 3:30, and 4:30, and at other hours to be arranged; 2d term, three hours, Monday, Wednesday, and Friday, at 8, 9, 10:15, 11:15, 2:30, and 3:30. Assistant Professor Lynn.

**4.—Narration and Description.** Study of general principles, with exercises. Required of all Juniors in the School of Fine Arts. 1st term, three hours, Monday, Wednesday, and Friday, at 8; 2d term, two hours, Tuesday and Thursday, at 8. Associate Professor O'Leary and assistants.

**5.—Exposition and Argument.** Study of general principles, with exercises and briefs. 2d term, three hours, Monday, Wednesday, and Friday, at 8; 1st term, two hours, Tuesday and Thursday, at 8. Assistant Professor Sisson and assistants.

## FRENCH.

**1.—Elementary French I.** Grammar (Fraser and Squair) and easy reading. Five hours, 1st term, daily, at 8, 9, 10:15, 11:15, or 1:30. Also given in the 2d term, five hours, daily, at 11. Drill in pronunciation and forms. Open to all students who have had three years of Latin or three years of German. Assistant Professor Neuenschwander, Assistant Professor Le Duc, or Assistant Professor Vaughan.

**2.—Elementary French II.** Five hours, 2d term, daily, at 8, 9, 10:15, 11:15, or 1:30. Also given in the first term, five hours, daily, at 9. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition. Assistant

Professor Le Duc, Assistant Professor Neuenschwander, or Assistant Professor Vaughan.

3.—Modern French Prose. Three hours, both terms—1st term, Monday, Wednesday, and Friday, at 9 or 10:15; 2d term, Monday, Wednesday, and Friday, at 8. Translation and reading of some works of Mérimée, George Sand, Anatole France, and René Bazin. Assistant Professor Neuenshwander or Assistant Professor Le Duc.

4.—Composition. Two hours, both terms, Tuesday and Thursday, at 9 or 10:15. Written exercises intended chiefly as a grammatical review. Oral exercises. Dictation. Assistant Professor Le Duc or Assistant Professor Neuenschwander.

## GERMAN.

1.—Outline of Grammar. The first eighteen lessons of Otis, with composition exercises. Carruth's Reader, about fifty pages. 1st term, daily, at 8, 9, 10:15, 11:15, and 1:30; 2d term, at 1:30. Associate Professor Engel, Assistant Professor Corbin, and assistants.

2.—Carruth's Reader, completed, Zschokke, Kleist, Heyse, (100 pp.), and Schiller's Wilhelm Tell (complete). Also special exercises on case government and auxiliary verbs (Otis, lessons 25–27), and sight-reading. 2d term, daily, at 8, 9, 11:15, and 1:30; 1st term, at 2:30. Associate Professor Engel, Assistant Professor Corbin, and assistants.

3.—Review of Grammar. Freytag's Die Journalisten. Geschichte des 30-jährigen Krieges. Sight-reading. 1st term, daily, at 8, 9, 10:15, 11:15, and 1:30; 2d term, at 9. Associate Professor Engel, Assistant Professor Corbin, and assistants.

4.—Schiller's Wallenstein (complete). 2d term, daily, at 8, 9, 10:15, 11:15, and 3:30; 1st term, at 1:30. Associate Professor Engel, Assistant Professor Corbin, and assistants.

## GREEK.

17.—History of Greek Art. Lectures, recitations, private reading, writing of themes. 2d term, daily, at 11:15. Professor Wilcox. (Not given in 1907.)

## MUSICAL THEORY.

Professor SKILTON.
Professor PREYER.

Courses 1 to 5, inclusive, are required of all students in music. Courses 6 to 8, inclusive, are required of all students in the collegiate courses in music, and are optional for students in the artist courses.

1.—HARMONY. The study of tone relations, scales, intervals; the formation and progression of chords, concords and discords, and modulations. The practical work consists of the harmonization of short musical sentences, chants, chorals, and original melodies; the study of all chord progressions at the piano and their recognition by the ear. Freshman, throughout the year, Tuesday and Friday, at 2:30. Professor Skilton.

2.—HARMONY. The study of inharmonic tones (suspensions, passing notes, etc.), the harmonization of original melodies, with practical applications at the piano. Sophomore, throughout the year, Tuesday and Friday, at 3:30. Professor Skilton.

3.—MUSICAL ANALYSIS. The simple homophonic and polyphonic forms; the phrase, period, two-part song, three-part song, and song with trio. Classical models with original work. Sophomore, 2d term, Tuesday and Friday, at 3:30. Professor Skilton.

4.—COUNTERPOINT. The different orders of single counterpoint in two, three, four or more parts. Combined counterpoint. Contrapuntal exercises applied to higher problems, such as the treatment of chorals, etc. Junior, 1st term, Monday, at 2:30. Professor Preyer.

5.—MUSICAL ANALYSIS. The variation and rondo forms; the sonatine and sonata forms. The analysis of Beethoven's sonatas. Junior, 1st term, Thursday, at 2:30. Professor Preyer.

6.—MUSICAL COMPOSITION. The homophonic forms, with original work in the classical dance forms—minuet, gavotte, etc.—and the accompaniment for the vocal solo and the violin solo. Open only to those who show talent for composition. Senior, 1st term, Wednesday, at 3. Professor Preyer.

7.—DOUBLE COUNTERPOINT; CANON AND FUGUE. Double counterpoint in the octave, tenth and twelfth. The various forms of canon and their application to higher problems. The most essential parts of the fugue, such as the subject, answer, countertheme, episode, stretto. The composition of the fugue as a whole,

in two, three and four parts. Senior, Monday, at 9, 1st term. Professor Preyer.

8.—INSTRUMENTATION. The nature, characteristics and treatment of the various instruments of the orchestra. The string quartet. Orchestral accompaniment. The overture, symphony. The cantata. Practical work for the University Orchestra. Senior, 2d term, Wednesday, at 3. Professor Skilton.

## ORGAN.

Professor SKILTON.

Courses 1 to 3, inclusive, are required of all organ students.

1.—MANUAL AND PEDAL STUDIES. Merkel and Archer. Junior, throughout the year, twice a week, by appointment. Professor Skilton.

2.—STUDIES AND SELECTIONS. Schmitt's Organ Etudes; Dudley Buck's Choir Accompaniment; Bach's Easy Preludes and Fugues; Buck's Studies in Pedal Phrasing; selections from Church and Concert Organist, Eddy, The Organist, Whiting, etc. Junior, twice a week throughout the year, by appointment. Professor Skilton.

3.—CHORUS ACCOMPANIMENT, FUGUES, AND STANDARD COMPOSITIONS. Extempore playing; Bach's Fugues; sonatas by Mendelssohn, Merkel, and Rheinberger; accompaniment for solos, masses, cantatas, and oratorios; compositions by Best, Guilmant, Ritter, Saint-Saëns, Thiele, Widor, Eddy, etc. Senior, twice a week throughout the year, by appointment. Professor Skilton.

## PIANOFORTE.

Professor PREYER.
Miss GREISSINGER.
Miss COOKE.
Miss MILLER.
Miss RIGHTER.
Miss WIEDEMANN.

Courses 1 to 4, inclusive, and course 6, are open only to students of the School of Fine Arts. Course 5 is open only to graduates in piano.

1.—TECHNIC. Hanon: Virtuoso Pianist. A limited number of studies from the following: Whiting, Melodious Technical Exercises; Hoffman, etudes for the left hand; Cramer-Buelow, sixty selected etudes; Preyer, twenty etudes, op. 35 (Shirmer); Bach, two- and three-part inventions (Litolff 1742), etc. Sonatas by

Haydn, Mozart, Beethoven. Selections from classic and modern compositions. Freshman, throughout the year, twice a week, by appointment. Professor Preyer and assistants.

2.—TECHNIC. Czerny: Daily Exercises. Etudes, selected according to the needs of the pupil, from Clementi's Preludes and Exercises; Jensen, op. 32; MacDowell, op. 39; Haberbier, Etudes Poesies, op. 53; Bach, English Suites. Concertos by Mozart, Hummel, etc. Selections from classic and modern compositions. Sophomore, throughout the year, twice a week, by appointment. Professor Preyer and assistants.

3.—Philipp: Daily Exercises. Clementi's Gradus ad Parnassum; Etudes from Moscheles, op. 70; Seeling, Concert Etudes, op. 10; Chopin, Preludes; Bach, Well-tempered Clavichord (Reinecke, B. and H.); concertos by Beethoven, Mendelssohn, etc; concert pieces by classic and modern composers. Junior, throughout the year, private lessons, twice a week, by appointment. Professor Preyer.

4.—Joseffy: School of Advanced Piano Playing. Philipp, etudes for the left hand; etudes from Chopin, op. 10 and op. 25; Rubinstein, op. 23, etc. Sonatas and Concertos by Beethoven, Weber, Grieg, etc. Concert pieces by modern composers. Senior, throughout the year, private lessons, twice a week, by appointment. Professor Preyer.

5.—A course for the study of pianoforte methods, aiming to develop independence of the fingers, and acquiring correct habits of practicing the scales, arpeggios, trills, octaves, chords, etc. Freshman and Sophomore, throughout the year. Wednesday, 3:30 to 4:30. Miss Greissinger.

GRADUATE COURSE.

6.—Philipp (continued). Modern etudes, by Liszt, MacDowell, etc; selections from Lebert & Stark, Pianoforte School, book IV. Transcriptions of Bach's organ fugues, by Liszt, Tausig, D'Albert, etc. Modern concert pieces and concertos. Twice a week throughout the year. Professor Preyer.

## PHILOSOPHY.

1.—ELEMENTARY PSYCHOLOGY. A part of the term, approximately one-third, is devoted to an exposition of the mental processes of deductive logic. Hyslop's Logic and Argument is used as a basis for this work. The remainder of the course is devoted to the study of the mental processes in general, and James's Psychology, Briefer Course, serves as a text. 1st and 2d terms, three hours, Monday, Wednesday, and Friday, at 9. Assistant Professor Hogg.

## PHYSICAL EDUCATION.

1.—MARCHING. Elementary work in free-hand, dumb-bells, wands, and clubs; hygienic work on the apparatus; gymnastic games for recreation. 1st term. Assistant Professor Fish.

2.—ADVANCED WORK IN FREE-HAND. Calisthenics, and hygienic work on the apparatus; athletics of an all-around nature; games for skill and physical judgment. 2d term. Assistant Professor Fish.

3.—EDUCATIONAL WORK WITH LIGHT AND HEAVY APPARATUS. Fancy marching; games requiring skill and self-control; squad leading in calisthenics and apparatus work. 1st term. Assistant Professor Fish.

4.—SPECIALIZING IN SOME LINE OF EXERCISE. Fencing and broadsword; conducting games, competitions, and exhibitions. 2d term. Assistant Professor Fish.

## PHYSICS.

11.—ACOUSTICS AND THERMICS. A course of about twenty lectures, with demonstrations, upon the scientific basis of harmony and of painting. Required of students in the School of Fine Arts. 2d term, by appointment, Professor Blake.

## VIOLIN.

Miss PHIPPS.

Courses 1 to 4, inclusive, are required of all violin students.

1.—SCHRADIECK'S FINGER TECHNIC; Hermann's Violin School, book I; Hermann's School of Scales, book I; Kayser's Thirty-six Etudes, books II and III; violin duets by Dancla, Mazas, Viotti; selections from the simpler compositions of Hermann, Singelee, Alard, De Beriot, Dancla, Papini, Leonard, and Daube. By appointment.

2.—HERMANN'S VIOLIN SCHOOL, BOOK II; Scales and Technic, by Bendix and Schradieck; Hermann's School of Scales, book II; Kreutzer's Forty Studies; sonates selected from Mozart and Handel; violin duets by Mazas; concertos from the early Italian masters; selections from the compositions of David, De Beriot, Viotti, Rode, Kreutzer, Sauret, Papini, Handel, and Bazzini. Ensemble playing. By appointment.

3.—SCALES AND TECHNIC BY BENDIX (continued); Hermann's School of Scales, book III; Fiorillo's Thirty-six Etudes; concertos by De Beriot, Spohr, and Mozart. Selections from the compositions

of Sauret, David, Wieniawski, Hauser, Vieuxtemps, Bazzini, and Bohm; sonatas for violin and piano, selected from Beethoven, Grieg, and Tartini. Ensemble playing. By appointment.

4.—Scales and Technic by Schradieck; Hermann's School of Scales, book III; Rode's Thirty-six Caprices; Dancla's Twenty Etudes; concertos by Spohr, Mendelssohn, Beethoven, and Bruch; sonatas selected from J. S. Bach; compositions by Sarasate, Hubay, Raff, Vieuxtemps, Wieniawski, Sauret, Ernst, Brahms, and Ries; violin duets by Spohr. By appointment.

## VOCAL CULTURE.

**Professor Hubach.**
**Mrs. Lyons.**
**Miss Flintom.**

Courses 1 to 5, inclusive, are required of all students taking the four years' work in vocal culture; courses 1, 2, 3 and 5 are open to all other musical students. Course 5 is required of all Sophomores. Course 8 is required of all students wishing to graduate as teachers.

1.—Tone-placing. Dictation exercises for the special needs of the individual voice. Sustained tones. Breath control and the true legato. The study of conditions necessary for the poising of the voice. The Italian vowels. Technical exercises selected from Vannini, Lamperti, Sieber, Abt, Panofka, Garcia, and Shakspere. Simple English and Italian songs. Freshman, twice a week throughout the year, by appointment.

2.—Voice Extension. Development of tone. Breath control. Exercises for flexibility from Lamperti, Nava, Concone, Vannini, Bordogni, Sieber, and Shakspere. English and Italian ballads. German lieder. Church solos. Sophomore, twice a week throughout the year, by appointment.

3.—Study of Tone Color. Exercises for flexibility, continued. Embellishments. Exercises from Concone, Panofka, Marchesi, Garcia, Panseron, and Rossini. German lieder, English oratorio, and church solos. Junior, twice a week throughout the year, by appointment.

4.—Methods of Tone-placing and Breathing. A comparative study. Exercises for bravura singing from Lamperti. Flexibility and finishing exercises from the masterpieces of vocalization. Stage deportment. Selections from Italian opera and English oratorio. Senior, twice a week throughout the year, by appointment. Professor Hubach.

5.—SIGHT-SINGING. Sound relationship. Time relationship. Rhythm. Dictation exercises. Unison, two part, three part, and four part. Professor Hubach.

6.—OPERA. Solo and chorus drill in the standard operas. Those taking this course are united with other singers from the University and city to form the school of grand opera. One presentation of opera will be given each year.

7.—ORATORIO. Solo and chorus drill in the standard works. Singers from the University and city are united to form the Oratorio Society. Presentation of oratorio will be given each year. This society annually engages a standard orchestra and eminent soloists for the spring festival.

8.—TEACHERS' COURSE. For students desiring to prepare themselves especially for teaching. Text: Manual Garcia. Professor Hubach.

# VI. The School of Pharmacy.

## Faculty.

FRANK STRONG, Ph. D., President.

LUCIUS E. SAYRE, Ph. M., Dean. Professor of Pharmacy.

EPHRAIM MILLER, Ph. D., Professor of Mathematics.

EDGAR H. S. BAILEY, Ph. D., Professor of Chemistry.

ERASMUS HAWORTH, Ph. D., Professor of Mineralogy.

WILLIAM C. STEVENS, M. S., Professor of Botany.

HENRY B. NEWSON, Ph. D., Professor of Mathematics.

IDA H. HYDE, Ph. D., Professor of Physiology.

MARSHALL A. BARBER, A. M., Associate Professor of Cryptogamic Botany and Bacteriology.

RAPHAEL D. O'LEARY, A. B., Associate Professor of English.

WILLIAM E. HIGGINS, LL. B., Associate Professor of Law.

ELMER F. ENGEL, A. M., Associate Professor of German.

MARTIN E. RICE, M. S., Assistant Professor of Physics.

L. D. HAVENHILL, Ph. M., Secretary. Assistant Professor of Pharmacy.

ALMA LE DUC, Ph. B., Assistant Professor of French.

CHARLES M. STERLING, A. B., Assistant Professor of Pharmacognosy.

JOHN N. VAN DER VRIES, Ph. D., Assistant Professor of Mathematics.

MARGARET LYNN, A. M., Assistant Professor of English.

CHARLES H. ASHTON, A. M., Assistant Professor of Mathematics.

DAVID F. MCFARLAND, M. S., Assistant Professor of Chemistry.

RALPH E. BASSETT, A. M., Assistant Professor of French.

GEORGE F. KAY, A. M., Assistant Professor of Mineralogy.

FRANCIS W. BUSHONG, S. D., Assistant Professor of Chemistry.

HERBERT H. VAUGHAN, A. B., Assistant Professor of French.

HERBERT W. EMERSON, B. S., Instructor in Pharmacy.

## Scope of the School.

The object of this school is to give its students a thorough practical training in all of those branches connected with the pharmaceutical profession in its various departments. A special emphasis is purposely placed upon chemistry, as this is the foundation of all pharmaceutical work. In the department of pharmacognosy there are offered facilities which are deemed adequate to this important branch of pharmacy and medicine.

The three courses offered by the school are arranged logically and progressively; the instruction is given according to modern methods, and in the spirit of those principles which, in their application to other classes of modern technical schools, have proved so eminently successful.

**Degrees.** The courses of study in the School of Pharmacy lead to the following degrees:

Bachelor of science.

Pharmaceutical chemist.

### Requirements for Admission.

There are two methods of admission to the School of Pharmacy: First, by examination; second, by certificate.

**By Examination.** Times and place of examination for subjects required for admission to the School of Pharmacy will be found in the General Catalogue, under "The College."

**By Certificate.** Candidates may enter the School of Pharmacy on certificates from the schools indicated by the next paragraph. The plan of entrance by certificate, noted under "The College" in the General Catalogue is followed.

FOR THE TWO- AND THREE-YEAR COURSES.

Candidates for admission to these courses must present certificates of graduation from accredited schools, or, in lieu of this, must present certificate covering work equal to that covered by graduation from the eighth grade of a grammar-school in arithmetic, United States history, geography, English grammar, and civil government, and, in addition, either be examined in, or present certificates from high schools, academies or colleges for, physics, Carhart and Chute, or equivalent, and Latin, Bennett's Latin Grammar, or equivalent.

The subjects in which the student may be deficient may be made

up during the first year of attendance, either in a special class or at the Lawrence high school.

FOR THE FOUR-YEAR COURSE.

Candidates for admission to the four-year course must conform, by examination or certificate, to the requirements for entrance to the Freshman year of the College. See General Catalogue, p. 75.

**Special Students.**

Special students, not candidates for a degree, may be admitted to the School of Pharmacy without conforming to the requirements for entrance. The admission of such students is under the control of the Dean, and his certificate of recommendation must be procured before the student presents himself to the Registrar.

**Expenses.**

By legislative enactment, a matriculation fee of five dollars (to be paid but once) must be charged each student of Kansas entering the School of Pharmacy. All students are required to pay an incidental fee of twenty-five dollars. Non-residents of Kansas must pay a matriculation fee of ten dollars and an incidental fee of thirty-five dollars. If the student so elects, one-half of the incidental fee may be paid at the beginning of each term. A fee of five dollars is required for diploma.

**Laboratory Supplies.** All the laboratories of the University and their equipment of power, engines, machinery, light, desks, tables, balances, microscopes, models and complete apparatus are at the disposal of students, under the direction of their instructors, free of cost. These desks, benches and tables will be further provided with individual sets of tools, sets of working apparatus and equipment, for the care of which the student will be held responsible and will be required to return in good condition. Students are requested to check these up at time of entering a laboratory course, to see that they get all that are charged to them. At the end of the course, or at the discretion of the instructor, all the individual equipment in good order must be returned. Such as may have been lost, damaged, broken or destroyed by the student must be paid for by him at that time.

Material of every kind consumed, ground up or used in the manifold experiments and practices in laboratories must be paid for by the student, but may be secured where the student elects. Students providing themselves with the exact change may obtain this of the storekeeper in any quantity at the various department storerooms at its cost. For the economic and prompt supply of such

material, coupon books, good in all departments, are furnished at the business office in amounts of five dollars and two dollars. Any coupons unused are redeemable in cash at the Secretary's office at the end of the course.

**Other Expenses.** There are no dormitories connected with the University. Students find accommodations in the boarding-houses and homes in Lawrence. Information concerning the location of rooming- and boarding-places may be had at the office of the Registrar.

The average price of board, rooms, light and fuel may be placed at $3.75 a week. Some persons who furnish plain rooms and good, plain food receive boarders at $3 or even $2.50 a week. Day board in private families and at city restaurants may be obtained for $2.50 to $3 a week. Day board in clubs varies from $2.25 to $3 a week. Furnished rooms, usually occupied by two students, range from $4 to $15 a month. Unfurnished rooms rent for $1.50 to $3 a month. Students who can supply their own furniture and buy and prepare provisions for the table themselves can attend the University for very little cost in money.

The following table shows the estimated expenses of a student of the School of Pharmacy for a year, excluding clothing and traveling expenses; the expense varies with the course pursued, and also depends upon the tastes and habits of the student:

| | *Low.* | *Average.* |
|---|---|---|
| Board | $80 00 | $120 00 |
| Room | 20 00 | 30 00 |
| Books and stationery | 10 00 | 20 00 |
| Laundry | 8 00 | 20 00 |
| Matriculation and other fees | 30 00 | 30 00 |
| Incidentals | 15 00 | 50 00 |
| Totals | $163 00 | $270 00 |

**Self-help.** Many students find work in private families, in offices, and in various occupations, by means of which they defray a portion of their expenses. Some students have earned their entire expenses while in attendance, and have made good records at the same time; other students have done so much work that they have not been able to keep up their studies, and have thus missed the one thing for which they came. If it is possible for the student to have a part of his expenses paid, he should not attempt to earn his way entirely by his own exertions. It is comparatively easy for a young man to earn half his living while attending the University and yet do good work in his classes. The student should bring with him at least enough money to live comfortably for a few

weeks, until he finds something to do. The University cannot guarantee work to any student, but will lend every possible assistance in finding employment. The University Christian Associations maintain employment bureaus, where the names of those seeking work and of those desiring workers are recorded. Students desiring places where they may help themselves are advised to apply to the University Y. M. C. A. or Y. W. C. A., or to the Registrar, University of Kansas, Lawrence.

### The Pharmaceutical Society.

This society was organized in December, 1886, by the students and instructors of the department, for the purpose of assisting each other in the study of sciences especially related to the art of pharmacy, in the practical applications of the same, and for friendly intercourse. Meetings are held biweekly during the school year.

### Positions for Graduates.

As an adjunct to the Pharmaceutical Society, an "annex" was established in 1890, whose aim it is to secure positions for graduates, and clerks for employers, who are graduates of the school. These graduates, now numbering more than 300, are occupying important positions. The majority of them are located in Kansas and adjoining states. The demand for registered graduates at salaries ranging from $60 to $125 per month has, for several years past, been far greater than the school can supply.

### Library.

The school possesses an extensive library, and is the regular recipient of the leading pharmaceutical journals and periodicals of America, England, Germany, and France.

For the convenience of students in chemistry and pharmacy, a branch library is provided in the building and adjacent to the chemical and pharmaceutical laboratories, where all the principal reference books and periodicals may be found.

### Collections.

The Pharmacy School possesses an extensive herbarium of medicinal plants, together with a collection of photographs representing nearly 200 species. This, in conjunction with the large herbarium of the botanical department, is available to students. Several hundred microscopical slides are at hand for use with the projection lantern, showing various drugs in cross and longitudinal section, as well as in powdered form; a large assortment of lantern slides, illustrating plants, drugs, prescriptions, pharmacies, and places and subjects of pharmaceutical interest; several cases of crystal models;

an extensive collection of official and unofficial salts, alkaloids, drugs and medicines, besides numerous smaller collections of particular interest.

**Equipment.**

The School of Pharmacy occupies the first two floors and basement of the east wing of the Chemistry and Pharmacy Building, located in the northwest corner of the campus.

The basement of the pharmacy department contains two research laboratories and the general pharmacy stock-room. The contents of this room are invoiced under the direction of an instructor, every year, by students, as a part of their business training and as a part of their practical drug-store work.

On the first floor are the two large general laboratories, balance-room, supply-room and the office and private laboratory of the Junior assistant. The Junior laboratory accommodates sixty students and is equipped with desks, lockers, and individual gas- and water-supplies. The Senior laboratory is similarly equipped and accommodates fifty-six students. Opening from this on the east is a special balance-room, provided with analytical balances for the exclusive use of the pharmacy students. The supply-room is conveniently located between the two laboratories. All the material necessary for the special courses in pharmacy can be obtained here.

The offices and private laboratories of the Dean and the secretary, the lecture-room, museum of pharmacognosy and the prescription research laboratory are on the second floor.

The lecture-room, with a seating capacity of 100, is provided with a large lecture-table and abundantly supplied with special pharmaceutical apparatus. The museum of pharmacognosy is directly above the Senior laboratory, and is devoted to the branches of pharmacognosy, pharmacal botany, and microscopy. Ample material is supplied for elucidation of these three important branches of modern pharmacy. In this room is one of the latest improved Bausch & Lomb stereopticons, with microscopical projection attachment, an instrument indispensable to the proper treatment of these subjects.

The prescription research laboratory is located at the rear of the lecture-room, and is equipped after the manner of a regular prescription pharmacy. It is furnished with a thirty-foot work-table provided with gas and water, three large double prescription cases each differing in style and manner of equipment, and fifty feet of tincture shelving. On these shelves are found various patterns of shop-bottles offered to American pharmacists. The entire equipment of the room has been carefully selected, with a view to give

comprehensive and varied instruction. In this room practical training is given in the preparation of medicines and the compounding of difficult prescriptions.

Laboratory instruction for pharmacy students is also given in the laboratories of the following departments: Chemistry, botany, mineralogy, physiology, and physics.

**Apparatus.**

For the various practical courses offered by this school a large amount of laboratory apparatus, of domestic and foreign types, is supplied. The various laboratories are equipped for manufacturing purposes, so that any preparation of the United States Pharmacopœia can be made by any of the official methods, and, in addition, appliances and materials are at hand for the unofficial and extra-pharmacopœial products.

The lecture-table is abundantly supplied with illustrative apparatus, so that the student may see before him the various processes in operation which may be carried on in the laboratories and at the prescription counters. Every attention has been given to illustrate pharmacy in all its phases.

The following is a partial list of special apparatus: Bausch & Lomb projection lantern and stereopticon, Laurent half-shade polariscope, Zeiss saccharimeter, spectroscope, refractometer; microscopes: Bausch & Lomb, Spencer, Leitz, etc.; balances: analytical, prescription, counter, solution, torsion, specific gravity, etc.; hydrometers, Beaume and specific gravity, single and in sets; lactometers, urinometers, alcoholmeters, etc.; microtomes, nitrometers, combustion furnaces; Bunsen burners, various patterns; pharmaceutical stills, apparatus for fractional distillation and evaporation *in vacuo*, tablet machines, suppository molds and presses, drug-mills, special percolators and apparatus for hot and cold extraction, continuous extractors, pill-machines, coaters, etc.

# Courses of Study.

The School of Pharmacy offers three complete courses of study, one of two years and one of three years—both leading to the degree of pharmaceutical chemist—and one of four years, leading to the degree of bachelor of science.

**The Two-year Course.** This is the regular course in pharmacy, first established by an act of the legislature, which leads to the degree of pharmaceutical chemist (Ph. C.) Graduates of this course may become registered pharmacists in Kansas without examination upon presenting to the State Board of Pharmacy evidence of having had two or more years of practical experience in a drug-store. The curriculum is confined to pharmaceutical subjects, and prepares directly for drug-store and dispensing work. The higher work of the other courses gives greater breadth of training, and prepares students for service with larger concerns and with manufacturing chemists.

**The Three-year Course.** The committee appointed by the Kansas Pharmaceutical Association to report on the School of Pharmacy recommended that the school inaugurate a *three-year course*, so that students who so desire could distribute their pharmaceutical education over this period of time. This course is especially recommended to those students who have had no drug-store experience, and to those who desire to avail themselves of the social advantages offered to college students. By special arrangement with the State Board of Pharmacy, graduates of this course may become registered pharmacists without examination upon the completion of one year of practical experience in a drug-store. The course leads to the degree of Ph. C., and, besides the diploma, a special certificate of proficiency is issued by the Dean upon the completion of the course of study outlined.

**The Four-year Course.** This course, leading to the degree of bachelor of science, from which the student graduates on a plane with the regular students of the College, opens the door, as does the bachelor of arts degree, to the degree of master of arts or doctor of philosophy, should the student desire to pursue his studies to that extent, and thus prepare himself for the higher calling of educational work.

**Registration with State Boards of Pharmacy.**

To all graduates who have had four years or more of practical experience (allowing two years for the time spent in college) a credential showing same will be given. This credential will be in the form of a special lithographed certificate signed by the Dean, setting forth the facts. Those graduates who have completed these requirements as to experience will receive this certificate when these requirements have been satisfied.

Arrangements have been made whereby holders of this special certificate may register without examination in several of the neighboring states and territories. Negotiations are now in progress with other states.

## Two-year Course.

**Leading to the Degree of Pharmaceutical Chemist.**

JUNIOR YEAR.

*First Term:*

Pharmacal Botany, (*a* and *b*), 8 to 10. Mr. Sterling.

Introductory Pharmacy, (*a* and *b*), 10:15 to 11: 15. Mr. Havenhill.

Introductory Chemistry, (*a* and *b*), 1:30 to 3:30. Mr. Bushong.

*Second Term:*

Galenical Preparations, (*a* and *b*), 8 to 10. Mr. Havenhill.

Official Pharmacy, (*a*), 10:15 to 11:15. Mr. Havenhill.

Inorganic Medicinal Salts, (*b*), 10:15 to 11:15. Mr. Havenhill.

Pharmacognosy, (*a* and *b*), 11:15 to 12:15. Mr. Sterling.

Pharmacy Qualitative Analysis, (*a* and *b*), 1:30 to 3:30. Mr. McFarland.

SENIOR YEAR.

*First Term:*

Physiology, (*a*), 8 to 10. Professor Hyde.

Pharmaceutical Testing, (*b*), 8 to 10. Mr. Havenhill.

Vegetable Histology and Study of Powdered Drugs, (*a* and *b*), 10:15 to 12:15. Mr. Sterling.

Theory and Practice of Pharmacy and Pharmaceutical Chemistry, (*a* and *b*), 2:30 to 3:30. Professor Sayre.

Pharmacy Quantitative Analysis, (*a*), 3:30 to 5:30. Mr. Curtis.

Mineralogy, (*b*), 3:30 to 5:30. Mr. Kay.

*Second Term:*

Plant Analysis, (*a*), 8 to 10. Professor Sayre and Mr. Emerson.

Physiological Chemistry, (*b*), 8 to 10. Professor Sayre and Mr. Emerson.

Organic Materia Medica and Pharmacology, (*a* and *b*), 11:15 to 12:15. Professor Sayre.
Toxicology, 11:15, Fridays. Professor Bailey.
Dispensing, (*a*), 1:30 to 3:30. Professor Sayre and Mr. Havenhill.
Organic Chemistry, (*a* and *b*), 3:30 to 5:30. Mr. Bushong.
Thesis, (*b*), 1:30 to 3:30. ———.

## Three-year Course.

**Leading to the Degree of Pharmaceutical Chemist.**

SOPHOMORE YEAR.

*First Term:*

Pharmacal Botany, (*a* and *b*), 8 to 10. Mr. Sterling.
Introductory Pharmacy, (*a* and *b*), 10:15 to 11:15. Mr. Havenhill.
Introductory Chemistry, (*a* and *b*), 1:30 to 3:30. Mr. Bushong.
Rhetoric and English Composition, (*a* and *b*), 4:30, two hours per week. Miss Lynn.

*Second Term:*

Rhetoric and English Composition, (*a* and *b*), 10:15, three hours per week. Miss Lynn.
Pharmacognosy, (*a* and *b*), 11:15 to 12:15. Mr. Sterling.
Pharmacy Qualitative Analysis, (*a* and *b*), 1:30 to 3:30. Mr. McFarland.

JUNIOR YEAR.

*First Term:*

Microbotany and Examination of Powdered Drugs, (*a* and *b*), 10:15 to 11:15. Mr. Sterling.
Physiology, (*a*), 8 to 10. Professor Hyde.
Pharmacy Quantitative Analysis, (*a* and *b*), 3:30 to 5:30. Mr. Curtis.

*Second Term:*

Galenical Preparations, (*a* and *b*), 8 to 10. Mr. Havenhill.
Official Pharmacy, (*a*), 10:15 to 11:15. Mr. Havenhill.
Inorganic Medicinal Salts, (*b*), 10:15 to 11:15. Mr. Havenhill.
Organic Chemistry, (*a* and *b*), 3:30 to 5:30. Mr. Bushong.

SENIOR YEAR.

*First Term:*

Practical Exercises, (*a*), 8 to 10. Mr. Havenhill.
Pharmaceutical Testing, (*b*), 8 to 10. Mr. Havenhill.
Theory and Practice of Pharmacy and Pharmaceutical Chemistry, (*a* and *b*), 2:30 to 3:30. Professor Sayre.

Library Work, (*a*), two hours, daily, by appointment. Professor Sayre.
Mineralogy, (*b*), 3:30 to 5:30. Mr. Kay.

*Second Term:*

Plant Analysis, (*a*), 8 to 10. Professor Sayre and Mr. Emerson.
Physiological Chemistry, (*b*), 8 to 10. Professor Sayre and Mr. Emerson.
Toxicology, 11:15, Fridays. Professor Bailey.
Organic Materia Medica and Pharmacology, (*a* and *b*), 11:15 to 12:15. Professor Sayre.
Dispensing, (*a*), 1:30 to 3:30. Professor Sayre and Mr. Havenhill.
Organic Analysis, (*a*), 3:30 to 5:30. Mr. Havenhill.
Thesis, (*b*), 1:30 to 3:30. ———.

## Four-year Course.

**Leading to the Degree of Bachelor of Science.**

(Sequence of studies recommended.)

FRESHMAN YEAR.

Rhetoric and English, five hours.
Algebra and Trigonometry, five hours.
Introductory Chemistry and Qualitative Analysis, ten hours.
German, ten hours.

SOPHOMORE YEAR.

General Physics, five hours.
French, ten hours.
Analytical Geometry,* five hours.
Quantitative Analysis, five hours.
Bacteriology, five hours.

JUNIOR YEAR.

Physical Measurements,* five hours.
Pharmaceutical Botany, five hours.
Introductory Pharmacy, five hours.
Pharmacognosy, five hours.
Official Pharmacy and Inorganic Medicinal Salts, five hours.
Organic Chemistry, five hours.

* For these may be substituted courses of similar length and grade in the departments of language, biology, or chemistry.

SENIOR YEAR.

*First Term:*

Microscopical Botany and Examination of Powdered Drugs, five hours.

Theory and Practice of Pharmacy and Pharmaceutical Chemistry, five hours.

Mineralogy, two and one-half hours.

Physiology, two and one-half hours.

Pharmaceutical Testing, two and one-half hours.

*Second Term:*

Plant Analysis, two and one-half hours.

Physiological Chemistry, two and one-half hours.

Organic Materia Medica and Pharmacology, five hours.

Toxicology, one hour.

Dispensing, two and one-half hours.

Organic Analysis.

Thesis, two and one-half hours.

# Courses of Instruction.

## BOTANY AND PHARMACOGNOSY.

Professor STEVENS.
Professor SAYRE.
Associate Professor BARBER.
Assistant Professor STERLING.
Assistant Professor HAVENHILL.

1.—PHARMACAL BOTANY. An introduction to morphology and taxonomy of phanerogams, vegetable histology and microchemical technique. Laboratory work, recitations, and lectures. Junior, 1st term, 8 to 10:15. Assistant Professor Sterling.

2.—ELEMENTARY STRUCTURAL BOTANY. A study of the structure of phanerogams, with a brief introduction to fungi, algæ, mosses, and ferns. The use of a manual; field-studies. Laboratory work and lectures. 2d term, (*a* and *b*), 1:30 to 3:30. Professor Stevens, Assistant Professor Sterling, and assistant.

3.—VEGETABLE HISTOLOGY. A study of plant tissues, with special reference to their development and functions; histological technique. Laboratory work and lectures. Open to students who have taken course 2 or its equivalent. 1st term, (*a* and *b*), 1:30 to 3:30. Professor Stevens and assistant.

4.—VEGETABLE HISTOLOGY AND STUDY OF POWDERED DRUGS. A study of the plant tissues; histological technique and the structural characteristics of the official drugs; the preparation of specimens and the analysis of powdered drugs. Open to all students who have had courses 1 or 3. Laboratory work and lectures. 1st term, (*a* and *b*), 10:15 to 12:15. Assistant Professor Sterling.

5.—BACTERIOLOGY. Bacteriological technique. Pathogenic bacteria and other forms of economic importance. Laboratory work, reading, and lectures. 2d term, (*a* and *b*), 8 to 10. Associate Professor Barber.

6.—PHARMACOGNOSY. A study of the geographical distribution, origin and physical characteristics of crude drugs. Lectures, recitations, and laboratory work. Junior, 2d term, at 11.15. Assistant Professor Havenhill and Assistant Professor Sterling.

## CHEMISTRY.

Professor BAILEY.
Professor SAYRE.
Assistant Professor HAVENHILL.
Assistant Professor MCFARLAND.
Assistant Professor CURTIS.
Assistant Professor BUSHONG.
Mr. EMERSON.

1.—INTRODUCTORY CHEMISTRY. A study of the chemical elements and their compounds. Experimental lectures, recitations, and laboratory work. Junior, 1st term, (*a* and *b*), 1:30 to 3:30. Assistant Professor Bushong and assistants.

2.—PHARMACY QUALITATIVE ANALYSIS. The isolation and identification of the important elements from mixtures and compounds. Text-book, Bailey and Cady's Guide to the Study of Qualitative Analysis. Must be preceded by course 1 or College courses 1 and 2. Lectures and laboratory work. Junior, 2d term, (*a* and *b*), 1:30 to 3:30. Assistant Professor McFarland.

3.—PHARMACY QUANTITATIVE ANALYSIS. A course especially adapted to the needs of the pharmacist, involving the simpler methods of gravimetric and volumetric analysis. Lectures and laboratory work. Must be preceded by course 2. Senior, 1st term, (*a*), 3:30 to 5:30. Professor Bailey and Assistant Professor Curtis.

4.—QUANTITATIVE ANALYSIS. (Course 8 in College.) A course similar to 3, extending over whole term. 1st term, (*a* and *b*), 3:30 to 5:30. Professor Bailey and Assistant Professor Curtis.

5.—ORGANIC CHEMISTRY. (Course 17 in College.) A study of the hydrocarbons and their derivatives. Lectures and recitations, Monday, Wednesday, and Friday; laboratory work, Tuesday and Thursday. Must be preceded by course 1. Senior, 2d term, (*a* and *b*), 3:30 to 5:30. Assistant Professor Bushong and assistant.

6.—PHARMACEUTICAL TESTING. Practical demonstrations and detail work in the detection of adulteration in medicinal chemicals. Laboratory work and lectures. Must be preceded by course 3. Senior, 1st term, (*b*), 8 to 10. Professor Sayre and Assistant Professor Havenhill.

7.—PHYSIOLOGICAL CHEMISTRY. A brief course adapted to the needs of the pharmacist, including the study of the carbohydrates, proteins, normal and abnormal products of animal life. Analysis of various secretions, urinalysis, etc. Laboratory work and lectures. Must be preceded by course 1. Senior, 2d term, (*b*), 8 to 10. Professor Sayre and Mr. Emerson.

8.—PHYSIOLOGICAL AND MEDICAL CHEMISTRY. This course is

offered to meet the requirements of medical students. Products of physiological interest are separated from animal tissues and organs and studied in detail. Special attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second part of the course consists of five weeks of urinalysis, embracing lectures, recitations, and work in both chemical and microscopical laboratories. 2d term, 1:30 to 3:30. Professor Sayre and Mr. Emerson.

9.—Advanced Work in Physiological Chemistry. Analysis of such dietetics as are used in medicine and the quantitative estimation of digestive ferments; the preparation of proximate constituents from animal tissues. Must be preceded by course 8, and is open to all students who have passed that subject. Professor Sayre and Mr. Emerson.

10.—Plant Analysis. The separation and estimation of the proximate principles of plant drugs. Must be preceded by course 21. 2d term, (*a*), 8 to 10. Professor Sayre and Mr. Emerson.

11.—Organic Analysis. The separation of the alkaloidal and glucosidal principles of vegetable drugs, and their estimation and identification by physical and chemical means. Required in the three- and the four-year courses. Senior, 2d term, (*a*), 3:30 to 5:30. Assistant Professor Havenhill.

12.—Drug Assaying. Advanced work in standardization of crude drugs and their preparation, and the valuation of chemicals. Mr. Havenhill.

13.—Plant Analysis. A systematic course of advanced work in the analysis of the chemical constituents of plants. Professor Sayre.

14.—Analysis of Nostrums. Determination of composition of articles with secret formulas. Professor Sayre.

## ENGLISH.

Assistant Professor Lynn.

1.—Rhetoric and English Composition. Outlines of rhetoric, with exercises and themes. Required of all Freshmen in the four-year course in the School of Pharmacy. 1st term, two hours, Tuesday and Thursday, at 8, 9, 10:15, 11:15, 3:30, 4:30; 2d term, three hours, Monday, Wednesday, and Friday, at 8, 9, 10:15, 11:15, 2:30, and 3:30, and at other hours to be arranged. Assistant Professors Bryant and Gray.

## FRENCH.

Assistant Professor LE DUC.
Assistant Professor NEUENSCHWANDER.
Assistant Professor VAUGHAN.

1.—ELEMENTARY COURSE. Grammar (Fraser and Squair) and easy reading. Drill in pronunciation and in forms. 1st term. Five divisions. Daily, at 8, 9, 10:15, 11:15, or 1:30. Assistant Professor Le Duc, Assistant Professor Neuenschwander, or Assistant Professor Vaughan. Prerequisite: Three years of Latin or three years of German.

2.—ELEMENTARY COURSE. A continuation of course 1. Reading of simple prose texts, with exercises in dictation and elementary composition. 2d term, daily, at 1:30. Assistant Professor Le Duc, Assistant Professor Neuenschwander, or Assistant Professor Vaughan.

## GERMAN.

Associate Professor ENGEL.
Assistant Professor CORBIN.

1.—OUTLINE OF GRAMMAR. The first twenty-four lessons of Otis, with composition exercises. Carruth's Reader, about fifty pages. 1st term, daily, at 8, 9, 10:15, 11:15, and 1:30; 2d term, daily, at 1:30. Associate Professor Engel or Assistant Professor Corbin.

2.—CARRUTH'S READER, completed, ZSCHOKKE, KLEIST, HEYSE (100 pp.), and SCHILLER'S WILHELM TELL (complete). Also special exercise in word order and auxiliary verbs and sight-reading. 2d term, daily, at 8, 9, 11:15, and 1:30; 1st term, daily, at 2:30. Associate Professor Engel or Assistant Professor Corbin.

3.—REVIEW OF GRAMMAR. Freytag's Die Journalisten. Geschichte des 30-jährigen Krieges. Outline of German literature in dictations and lectures. Sight-reading. 1st term, daily, at 8, 9, 10:15, 11:15, 1:30, and 3:30; 2d term, daily, at 9. Associate Professor Engel or Assistant Professor Corbin.

## MATHEMATICS.

Professor NEWSON.
Assistant Professor VAN DER VRIES.
Assistant Professor ASHTON.

2.—ALGEBRA. Quadratic equations, radicals, exponents, fundamental principles of logarithms, and use of logarithmic tables. Wentworth's College Algebra, revised. Three hours, both terms, Monday, Wednesday, Friday: 1st term, 8, 9, 11:15, and 2:30; 2d

term, 11:15 and 2:30. SOLID GEOMETRY, Wentworth's Geometry. Three hours, 2d term, Monday, Wednesday, and Friday, at 1:30. Or PLANE TRIGONOMETRY, Miller's Trigonometry. Two hours, both terms, Tuesday and Thursday: 1st term, at 8, 9, 11:15, and 2:30; 2d term, at 11:15 and 2:30. Assistant Professor Ashton.

2.—ANALYTICAL GEOMETRY. Elements of plane analytics, including the geometry of the conic sections, and an introduction to solid analytics. Tanner and Allen's Analytic Geometry or Ashton's Analytic Geometry. Two hours, both terms: 1st term, at 10:15 and 11:15; 2d term, at 8, 9, 10:15, 11:15, and 3:30. Professor Newson, Assistant Professor Van der Vries, and assistant.

## MINERALOGY.

Assistant Professor KAY.

1.—ELEMENTARY MINERALOGY. An abridgment of course 1, the College, including principally crystallography, blowpipe analysis, and a study of ores. 1st term, (*b*), 3:30 to 5:30. Assistant Professor Kay.

## PHARMACY AND MATERIA MEDICA.

Professor SAYRE.
Professor BAILEY.
Assistant Professor HAVENHILL.
Mr. EMERSON.

1.—INTRODUCTORY PHARMACY. A study of the subject of weights, measures, specific gravity; the processes employed in the preparation of medicines and the principles of pharmaceutical arithmetic. Lectures and recitations. 1st term, (*a* and *b*), 10:15 to 11:15. Assistant Professor Havenhill.

2.—OFFICIAL PHARMACY. A systematic study of the official preparations, including their classification, preparation, and preservation. Must be preceded by course 1. Lectures and recitations. 2d term, (*a*), 10:15 to 11:15. Assistant Professor Havenhill.

3.—GALENICAL PREPARATIONS. Practical work in the manufacture of standard medicinal preparations, as contained in the pharmacopœia and national formulary. Laboratory work and recitations. Must be preceded by course 1. Junior, 2d term, (*a* and *b*), 8 to 10. Assistant Professor Havenhill.

4.—INORGANIC MEDICINAL SALTS. The source, manufacture, physical properties, general and specific characteristics and identity of inorganic substances used in medicine. Lectures, recitations, and laboratory work. Must be preceded by introductory chemistry. Junior, 2d term, (*b*), at 10:15. Assistant Professor Havenhill.

5.—Theory and Practice of Pharmacy and Pharmaceutical Chemistry. A critical review of the preparations of the U. S. Pharmacopœia; methods of identification; tests for impurities and detection of adulterations occurring in medicinal salts; organic, inorganic and synthetical remedies. Lectures and recitations. Senior, 1st term, (*a* and *b*), at 2:30. Professor Sayre.

6.—Organic Materia Medica and Pharmacology. The classification, physical description, chemical constitution of the crude drugs of the pharmacopœias; their chemical and physiological properties; therapeutic application; methods of prescribing and dispensing; the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. Senior, 2d term, (*a* and *b*), Monday, Tuesday, Wednesday, and Thursday, at 11:15. Professor Sayre.

7.—Toxicology. Lectures on the sources, properties, methods for detection and antidotes for poisons. Must be preceded by introductory chemistry. Senior, 2d term, 11:15, Fridays. Professor Bailey.

8.—Dispensing. Compounding of prescriptions and a practical study of incompatibilities. Lectures and laboratory work. Senior, 2d term, (*a*), 1:30 to 3:30. Professor Sayre and Assistant Professor Havenhill.

9.—Thesis. Original research in one of the subjects connected with the pharmaceutical profession. An outline of the work should be presented to the Dean by the middle of the second term. Senior, 2d term, (*b*), 1:30 to 3:30.

10.—Library Work. Specially designed to familiarize the student with pharmaceutical literature; will include exercises in indexing and reviewing various topics. 2d term, (*b*), hours by appointment. Professor Sayre.

11.—Practical Exercises. These will include the care of the prescription room, stock-taking, etc. Must be preceded by courses 1 and 4, and pharmacognosy. Senior. 1st term, (*a*), 8 to 10. Assistant Professor Havenhill.

12.—Manufacture of artificial fruit essences and other compound ethers. Professor Sayre.

13.—Pharmaceutical Jurisprudence. Relating to the laws pertaining to pharmacy in different states, and to the laws pertaining to the mercantile business, together with practical business suggestions. A course of not less than ten lectures, given in connection with the Pharmaceutical Society. Hours by appointment. Associate Professor Higgins.

14.—PHARMACY AND PHARMACOGNOSY. A special course designed to meet the needs of medical students, comprising weights, measures and processes used in the preparation of medicines; the geographical distribution, physical properties and identification of crude drugs. Lectures, recitations, and laboratory work. 1st term, (*a*), 1:30 to 3:30. Assistant Professor Havenhill.

## PHYSICS.

Assistant Professor M. E. RICE.

1.—INTRODUCTORY PHYSICS. Recitations and laboratory. 2d term, daily, 10:15 to 12:15. Assistant Professor M. E. Rice.

Prerequisites: Algebra and plane geometry.

2.—GENERAL PHYSICS. Experimental lectures and recitations. 1st term, daily, at 9. Assistant Professor M. E. Rice.

Prerequisites: Physics 1, or equivalent, and plane trigonometry.

3.—PHYSICAL MEASUREMENTS AND METHODS. A laboratory course, to follow physics 2. 2d term, daily, 1:30 to 3:30. Assistant Professor M. E. Rice.

Prerequisites: Physics 2, or equivalent, and plane trigonometry.

## PHYSIOLGGY.

Professor HYDE.

1.—PHYSIOLOGY. A brief course in physiology. Lectures and recitations, with demonstrations, based upon the essential structures and functions of the human body, are supplemented twice a week by practical work in the laboratory. The treatment of emergency cases, observations on the action of drugs upon tissues, the relation of the different organs and bones to each other and the structure of the chief tissues are some of the subjects undertaken by each student. Senior, 1st term, (*a*), 8 to 10. Professor Hyde.

# VII. The School of Medicine.

## Faculty.

Frank Strong, Ph. D., President.

Clarence E. McClung, Ph. D., Acting Dean of the Scientific Department, and Associate Professor of Zoölogy.

Mervin T. Sudler, Ph. D., M. D., Dean of the Scientific Department, and Associate Professor of Anatomy.

George H. Hoxie, A. M., M. D., Dean of the Clinical Department, and Professor of Internal Medicine.

William Ellis Abrams, M. D., Internal Medicine.

Noah Adams, M. D., Rhinology and Laryngology.

Edgar H. S. Bailey, Ph. D., Professor of Chemistry and Metallurgy, and Director of Chemical Laboratories.

Marshall A. Barber, A. M., Associate Professor of Bacteriology and Pathology.

William J. Baumgartner, A. M., Assistant Professor of Zoölogy.

R. F. Barney, M. D., Surgery.

D. W. Basham, M. D., Lecturer on Surgery.

Thomas J. Beattie, M. D., Gynecology.

John F. Binnie, M. D., Surgery.

Edward G. Blair, M. D., Surgery.

Jacob Block, M. D., Genito-urinary Surgery.

Charles E. Bowers, M. D., Lecturer on Surgery.

Julius Bruehl, M. D., Internal Medicine.

Francis W. Bushong, Sc. D., Assistant Professor of Chemistry.

Hamilton P. Cady, Ph. D., Assistant Professor of Chemistry.

R. E. Castelaw, M. D., Internal Medicine.

H. L. Chambers, M. D., General Medicine.

Edward L. Chambliss, M. D., Internal Medicine.

Fay P. Clark, M. D., Electrotherapeutics.

W. H. Coffey, M. D., Proctology.

George O. Coffin, M. D., Surgery.

Robert J. Curdy, M. D., Ophthalmology.

Francis M. Dailey, M. D., Lecturer on Surgery.

Forrest W. Dailey, M. D., Rhinology and Laryngology.

Oliver H. Dean, Lecturer in Medical Jurisprudence.

Herbert W. Emerson, B. S., Instructor in Pharmacy and Physiological Chemistry.

Samuel C. Emley, M. D., Associate Professor of Bacteriology and Pathology.

J. Wesley Faust, M. D., Nervous and Mental Diseases.

Hal Foster, M. D., Rhinology and Laryngology.

William J. Frick, M. D., Surgery.

William Frick, M. D., Dermatology.

Blencoe E. Fryer, M. D., Ophthalmology.

Oliver J. Furst, M. D., Lecturer on Pediatrics.

James W. Gaines, M. D., Otology.

Virginius W. Gayle, M. D., Therapeutics.

Samuel S. Glasscock, M. D., Mental and Nervous Diseases.

Max Goldman, M. D., Pediatrics.

Clarence C. Goddard, M. D., Psychiatry.

George M. Gray, M. D., Surgery.

Jefferson D. Griffith, M. D., Surgery.

Don Carlos Guffey, M. D., Obstetrics.

C. Lester Hall, M. D., Gynecology.

D. Walton Hall, M. D., Rhinology and Laryngology.

Frank J. Hall, M. D., Associate Professor of Pathology and Director of Clinical Laboratory.

George F. Hamel, M. D., Surgery.

Henry O. Hanawalt, M. D., Neurology.

Charles B. Hardin, M. D., Hygiene.

Nathan O. Harrelson, M. D., Gynecology.

James L. Harrington, M. D., Genito-urinary Surgery.

John K. Harvey, Assistant Instructor in Physiology.

L. D. Havenhill, B. S., Assistant Professor of Pharmacy.

Ellery M. Hetherington, M. D., Gynecology.

R. W. Holbrook, M. D., Dermatology.

Charles S. Huffman, M. D., Lecturer on Obstetrics.

P. D. Hughes, M. D., Surgery.

John W. Hunt, M. D., Clinical Pathology.

Bennett C. Hyde, M. D., Surgery.
Ida H. Hyde, Ph. D., Professor of Physiology.
Benjamin Jacobs, M. D., Internal Medicine.
M. F. Jarrett, M. D., Lecturer on Ophthalmology.
C. W. Jones, M. D., Gynecology.
George A. King, M. D., Internal Medicine.
Norman L. Knipe, M. D., Gynecology and Obstetrics.
William F. Kuhn, M. D.,* Neurology.
John W. Kyger, M. D., Pediatrics.
Simon B. Langworthy, M. D., Lecturer on Gynecology.
J. Halcombe Laning, M. D., Internal Medicine.
Charles H. Lester, M. D., Pediatrics.
Joseph S. Lichtenberg, M. D., Ophthalmology.
C. J. Lidikay, M. D., Ophthalmology.
O. M. Longenecker, M. D., Internal Medicine.
Henry H. Look, M. D., Ophthalmology.
Richard C. Lowman, M. D., Surgery.
Ernest J. Lutz, M. D., Internal Medicine.
James W. May, M. D., Ophthalmology.
W. L. McBride, M. D., Dermatology.
David F. McFarland, M. S., Assistant Professor of Chemistry.
John W. Miller, M. D., Internal Medicine.
Benjamin F. Morgan, M. D., Lecturer on Anesthesia.
Calvin J. Morrow, M. D., Proctology.
Frederick D. Morse, M. D., History of Medicine.
George C. Mosher, M. D., Obstetrics.
Franklin E. Murphy, M. D., Internal Medicine.
James Naismith, M. D., Associate Professor of Physical Education.
Zachariah Nason, M. D., Obstetrics.
Harry O'Donnell, M. D., Lecturer on Internal Medicine.
John W. Perkins, M. D., Surgery.
David R. Porter, M. D., Lecturer on Life Insurance.
Melancthon C. Porter, M. D., Lecturer on Surgery.
Russell A. Roberts, M. D., Proctology.

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* On leave of absence.

Ernest F. Robinson, M. D., Surgery.
Carl Sandzen, M. D., Physical Therapeutics.
J. E. Sawtell, M. D., Rhinology and Laryngology.
Lucius E. Sayre, B. S., Professor of Pharmacy.
Edward W. Schauffler, M. D., Internal Medicine.
Robert McE. Schauffler, M. D., Surgery.
W. H. Schutz, M. D., Ophthalmology.
John N. Scott, M. D., Electrotherapeutics.
B. T. Sharp, M. D., Gynecology.
Charles J. Simmons, M. D., General Surgery.
Robert T. Sloan, M. D., Internal Medicine.
Eugene Smith, M. D., Demonstrator in Anatomy.
J. Herbert Smith, M. D., Gynecology.
Charles L. Spaulding, M. D., Orthopedic Surgery.
Charles M. Stemen, M. D., General Medicine.
Preston Sterrett, M. D., Internal Medicine.
Ambrose Talbot, M. D., Internal Medicine.
Lincoln G. Taylor, M. D., Neurology.
John H. Thompson, M. D., Ophthalmology.
Edward H. Thrailkill, M. D., Proctology.
James E. Trexler, M. D., Genito-urinary Surgery.
William Kirk Trimble, M. D., Clinical Pathology.
John Troutman, M. D., Electrotherapeutics.
Lyman L. Uhls, M. D., Lecturer on Psychiatry.
Frederick T. Van Eman, M. D., Gynecology.
Ernest von Quast, M. D., Orthopedic Surgery.
Lalia V. Walling, Laboratory Assistant in Physiology.
Frank H. Weiss, M. D., Pediatrics.
Hugh Wilkinson, M. D., Surgery.
I. J. Wolf, M. D., Internal Medicine.
N. P. Wood, M. D., Internal Medicine.
C. L. Zugg, M. D., Internal Medicine.

## History and Organization.

In the act of the legislature establishing the University there was contemplated the founding of a Medical School, but conditions were such that until the present year it was not possible to carry out completely the plans which were then laid. Some steps were taken, as opportunity offered, to further the formation of a Medical School, and, in 1880, the "Preparatory Medical Course," under the administration of the College, was started. Until 1899 this was the only indication that the University was interested in the subject of medical education. In this year the School of Medicine was definitely organized, and the first two years of a modern course was offered to students. It was believed that the remaining two years could not profitably be attempted at Lawrence, and so the matter rested until it was thought feasible to put the clinical work upon a foundation sufficiently broad for the building of a Medical School that would compare favorably with the other schools of the University.

Such an establishment became possible through the generosity of Dr. Simeon B. Bell, of Rosedale, Kan., who, in memory of his wife, Eleanor Taylor Bell, gave the University money and property sufficient to build and equip the necessary laboratories and hospitals. In addition to this, three of the medical schools already in operation in Kansas City gave up their existence and were merged into the University. These schools were the Kansas City Medical College, founded in 1869, the Medico-chirurgical College, founded in 1896, and the College of Physicians and Surgeons, founded in 1893. The present year, therefore, witnesses the final step in the founding of a University Medical School in Kansas, and now for the first time the full four-year course is given.

## Arrangement of the Work.

### The Scientific Department.

The work of the first two years is given at Lawrence, under the direction of a Dean of students. It consists of the fundamental scientific branches, anatomy, histology, embryology, physiology, pathology, chemistry, bacteriology, etc., which are given in the well-equipped University laboratories. Medical students have all the advantages of libraries, museum and lectures that are to be found in a large educational institution. Matriculation and registration for the first two years are to be had at Lawrence.

### The Clinical Department.

The third and fourth years are given in the laboratories and hospitals at Kansas City and Rosedale, under the charge of a dean of students. In the various hospitals and dispensaries the students have opportunities to work with about 75 ambulant patients daily, while the hospitals affiliated with the University contain some 600 beds. Students of the third and fourth years register with the Dean at Kansas City.

## Equipment.

Practically the whole scientific equipment of the University is at the disposal of the students of the School of Medicine. There are sixty-five separate laboratories at the University of Kansas, most of which are available for work in connection with medical instruction.

The greater part of the work is in the laboratory, with recitations and assigned readings, the lectures being supplementary only. For this reason special attention has been given to equipping the laboratories, where the student spends the larger part of his time. The physiological laboratory is supplied with a set of apparatus for the use of each student. In the laboratories of bacteriology, histology, and embryology, each student is provided with a microscope and other apparatus for his exclusive use. In the various courses in chemistry, the equipment is adequate for thorough individual work; while the well-established School of Pharmacy offers exceptional facilities to the student of medicine.

There are commodious laboratories for histology, pathology, bacteriology and embryology in Snow Hall, which was refitted during the summer of 1903 at large expense. The old chemistry building is devoted to human anatomy and physiology, and was also refitted during the summor of 1903. Its half-dozen laboratories now afford large facilities for work in physiology and anatomy. All the work in chemistry is done in the Chemistry Building. This arrangement will provide, all together, fifteen separate and large laboratories for the regular use of the medical students.

The clinical department possesses all the equipment of the three schools that were merged, plus an added stock of microscopes and other laboratory utensils, together with dispensary facilities. Each student is provided with his own oil-immersion microscope, locker, and individual desk or table. The laboratory has an immense amount of material carefully preserved by modern methods. In addition, the best domestic and foreign journals are kept on file for the help of those students who show an ability to do original work.

The medical pavilion of the Eleanor Taylor Bell Memorial Hospital is now ready for use, and will afford valuable opportunities to demonstrate methods of treament, not only by means of drugs but also by dieto-, mechanico- and hydrotherapy. Its equipment is complete. (See descriptions, p. 44.)

The General (or City) Hospital, of Kansas City, Mo., is open to the University of Kansas, and clinics in both medicine and surgery are given there every Saturday morning. This, of course, shows valuable emergency service, not so readily observed in a private institution. The hospital now contains some 150 beds, and when the new and more modern institution now under construction is complete, it will contain some 200 more.

St. Joseph's Hospital has always been freely open to aid the progress of medicine and surgery; and the University is so fortunate as to be able to present clinics there Tuesday, Wednesday and Thursday forenoons—held by some of the ablest men in the Missouri valley. In addition, the large out-patient department of the hospital is at the service of our students. The hospital contains about 200 beds.

St. Margaret's Hospital, with its 300 beds, affords the students of the University extremely valuable means of instruction. Ward classes are conducted here every forenoon.

The German Hospital has kindly opened its doors to the University, and its fifty beds, with the out-patient department, afford much instruction to the medical student.

The largest dispensary is in the building formerly occupied by the Medico-chirurgical College at 918 Independence avenue, Kansas City, Mo. Here the University students see and treat, under the direction of the Faculty, thirty to forty patients daily.

The Kansas City, Kan., dispensary is about half the size of the above, but is of especial value because it affords many cases of accidental injury from the packing-houses. A dispensary at Rosedale is being established.

## Admission.

There are two methods of admission to the School of Medicine: First, by examination; second, by certificate.

**By Examination.** Students who cannot present certificates from accredited schools will be examined in the subjects required for admission at the times and place of examination, indicated in the General Catalogue, under the College. Subjects upon which the candidate will be examined are given below.

**By Certificate.** Nearly all students enter the School of Medi-

cine on certificates from high schools, academies, or other preparatory schools. The method of accrediting by certificate is the same as that in the College.

Graduates of state normal schools, or of high schools or academies outside of the state of Kansas, whose credits are accepted by another state university, may be admitted under the same condition.

**Number of Units Required.**

The time value of each study is stated in units, a unit meaning one high-school study pursued daily for at least thirty-five weeks. A total of fifteen units is required for entrance. A student may be conditioned in not more than three units. Conditions must be made good before entrance into the second year.

**Subjects for Admission.**

The subjects from which entrance work may be offered, together with the number of units, are arranged in six groups, as follows; a total of fifteen units must be offered:

| | | |
|---|---|---|
| GROUP I, English. | English, four units. | Two units are required. |
| GROUP II, Mathematics. | Algebra, one and one-half units.<br>Plane geometry, one unit.<br>Solid geometry, one-half unit. | Two units are required. |
| GROUP III, Foreign Languages. | Latin, four units.<br>Greek, three units.<br>German, three units.<br>French, three units. | Two units are required, of which one must be Latin. |
| GROUP IV, Physical Sciences. | Physical geography, one unit.<br>Physics, one unit.<br>Chemistry, one unit. | One unit required, which must be laboratory work. |
| GROUP V, Biological Sciences. | Botany, one unit.<br>Zoology, one unit. | One unit required, which must be laboratory work. |
| GROUP VI, History. | Greek and Roman, one unit.<br>Mediæval and modern, one unit.<br>English, one unit.<br>American, one unit.<br>Economics, one unit. | One unit required. |

As observed above, to secure unconditional admission to the Freshman class of the School of Medicine the candidate must offer

fifteen units from the foregoing list of accredited preparatory subjects. The subjects acceptable for admission are divided, therefore, as follows:

**Required.** *Nine units:* English, 2; mathematics, 2; foreign language, 2 (one unit must be Latin); science (laboratory work in physics, chemistry, botany, or zoölogy), 2; history, 1.

**Optional.** *Six units, to be chosen from the following:* English, 1; history, 3; foreign language, 3; biological science, 1; physical science, 1; physical geography, 1; economics, 1.

### Advanced Standing.

Advanced standing is granted only upon examination in those subjects for which credit is desired. These examinations are conducted by the Dean of the Scientific Department for the first two years' work, and by the Dean of the Clinical Department for the work belonging to the third year. Candidates desiring such advanced standing must submit in detail a schedule of the work done by them and for which they wish credit; such schedules to be signed by the instructor in each subject or by a competent officer of the institution in which the work was done.

### Expenses for the Scientific Department.

By legislative enactment, a matriculation fee of five dollars (to be paid but once) must be charged each Kansas student entering the School of Medicine. All students are required to pay an incidental fee of twenty-five dollars. In the six-year course, during the first three years the fee will be the incidental fee of the College; in the remaining three years the regular fees of the Medical School will be charged. Non-residents of Kansas must pay a matriculation fee of ten dollars and an incidental fee of thirty-five dollars. If the student so elects, one-half of the incidental fee may be paid at the beginning of each term. Laboratory fees, to cover cost of material used, will be charged by the different departments. The amount of these fees will average about as follows: Anatomy, $5 per part; physiology, $10; histology, $2.50; embryology, $1; chemistry, $5 to $10; physiological chemistry, $3; bacteriology, $2.50; pathology, $2.

All laboratory fees must be paid within ten days of the beginning of the course.

### Fees for the Clinical Department.

A minimum charge of seventy-five dollars a year will be made to each student for tuition. Besides this, there is for those Kansas students who have not previously enrolled in the University of Kansas a matriculation of five dollars (for non-residents ten dollars), payable but once.

Students must pay the actual cost of material consumed, wasted or broken in laboratory experiments. The materials for the laboratory work may be purchased at the stock-room of the school, or elsewhere, as the student may prefer.

For each course a special fee will be attached, and when the sum of these fees exceeds seventy-five dollars per annum the student will be charged for the difference; however, a student may secure for $100 a full ticket covering whatever work he may take during the year.

Unless otherwise stated in the announcement of the course itself, the fees for courses will be as follows:

| | | |
|---|---|---|
| Didactic work, each hour..... | $1 00 | per term. |
| Laboratory work, each period..... | 4 00 | " |
| Clinical work, each period..... | 2 00 | " |
| Hospital tickets, each, per year ..... | 5 00 | " |

In explanation of this, a course of lectures coming three hours a week for a term will cost three dollars; a laboratory course covering two and one-half days of four hours each will cost sixteen dollars a term; each weekly clinic registered for will cost five dollars.

All fees for the term must be paid at the time of registration.

### Registration and Enrolment.

The exacting nature of the work in the Medical School makes it necessary for students to enter promptly into their classes. Enrolment must therefore be secured within the first week of each term. Students may enter later only for good reasons, but, in the discretion of the Dean of the department, they may have the amount of their work limited.

Application for enrolment by resident students must be made at least two weeks before the end of each preceding term.

### Examinations.

Examinations will be held for all students during the last days of each course. Final examinations occur on the last day of the term or half-term.

Failures must be made good at the earliest suitable moment. If

not removed before the recurrence of the courses, the work will have to be taken again in class.

Failure in more than a third of the student's work severs his connection with the University. He may be reinstated only by the action of the Dean of the department.

### Degrees.

Two degrees are open to students in the School of Medicine:

The degree of doctor of medicine is granted to those satisfactorily completing the work of the full four-year medical course.

The degrees of bachelor of arts and doctor of medicine are conferred upon those completing the full six-year course in the College of Liberal Arts and Sciences and in the School of Medicine, as laid down in the catalogue of the College.

### Requirements for Graduation.

The University of Kansas has adopted as a unit of study a lecture or recitation one hour in length, or laboratory or clinical period two hours in length, once a week for a term of eighteen weeks. The University requires, therefore, of candidates for the degree of doctor of medicine, credits for 140 hours of study in the School of Medicine. These hours must be distributed as follows:

Anatomy, histology, and embryology, 30 hours; physiology and physiological chemistry, 20 hours; bacteriology, 5 hours; pathology, 15 hours; materia medica and pharmacology, 5 hours; internal medicine, 15 hours; surgery, 12 hours; obstetrics, 3 hours and the conduct of six births; gynecology, 3 hours; skin and venereal diseases, 1 hour; nervous and mental diseases, 3 hours; ophthalmology, 1 hour; elective, 27 hours.

### Amount of Work.

It is not advisable to attempt to carry full work in the Medical School and to engage in outside occupations. If it is necessary for students to make a portion of their expenses while in school, a longer time will be required to complete the course. Should students for any reason be unable to carry full work, they may, at the discretion of the Dean of the department, be withdrawn from certain courses.

### Graduate Instruction.

The University has established short courses of instruction for graduates of reputable medical colleges. These postgraduate courses are in terms of five weeks each. Graduates also may en-

ter the undergraduate courses when these are not full. Special courses will be organized from time to time as the demand arises. In particular, a special course in clinical pathology is offered each spring, from the middle of April to the 1st of June. The attention of graduates desiring postgraduate instruction is particularly directed to the section classes in the hospitals and dispensaries, where advanced students study patients and their treatment at closer range than can be had in the ordinary amphitheater clinic.

# Courses of Study.

There are two courses of study open to the medical student—a four-year course, leading to the degree of doctor of medicine, and a six-year-course, in which the student may earn the degree of bachelor of arts at the end of four years and the degree of doctor of medicine after two years more. It is earnestly recommended that the six years' work be taken, since without adequate and thorough preparation the physician starts into work seriously handicapped, and remains throughout his professional career removed from the position of usefulness and influence that he should occupy. By undertaking the six-year course the student may, during the first and second years of his connection with the University, secure training in the modern languages and in the physical and biological sciences that will be of inestimable value to him.

## Six-year Course.

This consists of the Freshman and Sophomore work in the College, certain courses of Junior value in the College that are found also in the first year of the medical course, and finally the last three years of the medical curriculum. For entrance requirements and those relating to the prescribed work of the Freshman and Sophomore work, see the General Catalogue of the University.

Those entering with acceptable botany, zoölogy or chemistry should take advanced courses in these subjects in the Freshman and Sophomore years. Physics must not be omitted. Those who enter with neither German nor French should pursue one or the other of those languages, preferably the former, during the whole, or the most, of the Freshman and Sophomore years; those who enter with preparation in either of these languages should seek to become as proficient as possible in both.

Registration will be secured in the College for the first three years and during the fourth year in the Medical School. At the end of the fourth year, on completion of all the requirements of the College, the College will grant the degree of bachelor of arts. Upon the completion of this work the student will enroll in the courses of the third and fourth years of the Medical School, and will receive the degree of doctor of medicine when satisfactory examinations are taken.

The following schedule is recommended (the courses named may be found under the College courses of instruction) for those desiring the degree of bachelor of arts in preparation for medicine. The subjects required in the Medical School must be taken.

FRESHMAN YEAR.

*First Term:*

French or German, Rhetoric 1, Mathematics 2, Zoölogy 1, Chemistry 1, Hygiene, Physical Education.

*Second Term:*

French or German, Rhetoric 2, Mathematics 3, Zoölogy 2 or Chemistry 2, Physical Education.

SOPHOMORE YEAR.

*First Term:*

French or German, Zoölogy 3 or Botany 2 or Physics 3, Chemistry 3, Physical Education.

*Second Term:*

French or German or Greek, Botany 1 or Zoölogy or Physics 4, Chemistry 4.

JUNIOR YEAR (FIRST-YEAR MEDICAL).

*First Term:*

Anatomy 1, Histology and Embryology, Chemistry.

*Second Term:*

Anatomy 2, Physiological Chemistry, Histology and Embryology.

SENIOR YEAR (SECOND-YEAR MEDICAL).

*First Term:*

Anatomy 3, Physiology 5, Bacteriology, Diagnosis, Surgery, History of Medicine, Dispensing.

*Second Term:*

Physiology 1, Pathology, Diagnosis, Surgery, Physical Diagnosis.

The fifth and sixth years will be found as the third and fourth years of the four-year course below.

## Four-year Course.

The work of the first and second years is of a general scientific character, and will be given at Lawrence, where the facilities are of the best. For the same reason, the third and fourth years' work will be conducted at Kansas City, where clinical material is abundant.

FIRST YEAR.

*First Term:*

Anatomy, daily, 8 to 12:15. Professor Sudler.
Chemistry, daily, 1:30 to 3:30. Doctor Bushong.
Histology, Monday, Wednesday, and Friday, 3:30 to 5:30. Mr. Baumgartner.
Embryology, Tuesday and Thursday, 3:30 to 5:30. Professor McClung.

*Second Term:*

Anatomy, daily, 8 to 12:15. Professor Sudler.
Physiological Chemistry, daily, 1:30 to 3:30. Mr. Emerson.
Organic Chemistry, Monday, Wednesday, and Friday, 3:30 to 5:30. Doctor Bushong.
Histology, Tuesday and Thursday, 3:30 to 5:30. Mr. Baumgartner.

SECOND YEAR.

*First Term:*

Anatomy, daily, (*a*), 8 to 12:15. Professor Sudler.
Physiology, daily, (*b*), 8 to 12:15. Professor Hyde.
Bacteriology, daily, 1:30 to 3:30. Professor Barber.
Dispensing, Tuesday and Thursday, 3:30 to 5:30. Mr. Havenhill.
Diagnosis, Monday, 3:30 to 5:30. Doctor Chambers.
History of Medicine, Friday, 3:30 to 5:30. Doctor Morse.
Surgery, Wednesday, 3:30 to 5:30. Doctor Simmons.

*Second Term:*

Physiology, daily, 8 to 11:15. Professor Hyde.
Materia Medica, daily, 11:15 to 12:15. Professor Sayre.
Toxicology, Friday, 11:15 to 12:15. Professor Bailey.
Pathology, daily, 1:30 to 3:30. Doctor Emley.
Diagnosis, Monday and Friday, 3:30 to 5:30. Doctor Chambers.
Physical Diagnosis, Tuesday and Thursday, 3:30 to 5:30. Doctor Naismith.
Surgery, Wednesday, 3:30 to 5:30. Doctor Simmons.

THIRD YEAR (KANSAS CITY).

*First Term (the following work is definitely required):*

Surgery (special), five hours, 9 to 10.
Internal Medicine, five hours, 10 to 11.
Gynecology, Monday and Wednesday, 11 to 12.
Obstetrics, Tuesday, Thursday, and Friday, 11 to 12.
Pathological Laboratory, Tuesday and Thursday, 1 to 5.
Physical Diagnosis, two afternoons, 1 to 3 (in sections).
General Clinic, both medical and surgical, City Hospital, Saturday, 8:30 to 12.

*First Term, Elective Work:*

Students may elect additional clinical work during this term, if they so desire. For this is offered especially the work in rhinology 1 and dermatology 1.

*Second Term, Required Work:*

Obstetrics, Manikin Practice, Monday and Friday, at 8.
Obstetrics, Lectures on Dystocia, Wednesday, at 11.
Surgery, Monday and Friday, at 9.
Pediatrics, Wednesday, at 9.
Organic Nervous Diseases, Monday and Friday, at 11.
Therapeutics, Monday and Friday, at 10.
Amphitheater Clinic, at City Hospital, Saturday, 8:30 to 12.
Amphitheater Clinic, at St. Joseph Hospital, Tuesday, 9 to 12.
Pathological Laboratory, Tuesday and Thursday, 1 to 5.
Internal Medicine, Wednesday, at 10.
Internal Medicine, clinical, two afternoon periods, 1 to 3.
Rhinology, one afternoon period.
Dermatology, one afternoon period.
Surgery, clinical, one afternoon period.
Ophthalmology, Lectures, Tuesday and Thursday, at 5.

*Second Term, Elective Work:*

Those students who have the time and strength for it may select additional work from the lists of electives given in the following tables.

FOURTH YEAR (KANSAS CITY).

*First Term, Required Work:*

Amphitheater Clinics, St. Joseph's Hospital, Tuesday and Thursday, 9 to 12.
Dietetics, Monday and Friday, at 9.
Surgery, Wednesday at 9; Friday, at 8.
Hygiene, Monday and Friday, at 10.
Psychiatry, Monday and Friday, at 11.
Otology, Wednesday, at 10.
Gynecology, Wednesday, at 11.
Gynecology, clinical, one afternoon period.
Internal Medicine, clinical, two afternoon periods.
Rhinology, one afternoon period.
Dermatology, one afternoon period.
Pediatrics, one afternoon period.
Neurological Clinic, one afternoon period.
Minor Surgery, one afternoon period.
Surgical Technique, one afternoon period.

Special Lectures, Wednesday, at 5.
Pathological Laboratory, Wednesday and Friday, 1 to 5.
Ward Classes at St. Margaret's Hospital—two weeks' continuous service for each student.

*First Term, Elective Work:*

Students may take elective work on Saturday morning and at such other times as they have leisure and strength.

*Second Term, Required Work:*

Amphitheater Clinics, at St. Joseph's or Bethany Hospital, Wednesday and Thursday, 9 to 12.
Ward Classes in Sections—two forenoons each week—in St. Joseph's and St. Margaret's Hospitals, according to the schedules on the following pages. This includes work in surgery, medicine, and electrotherapy.
Ophthalmological Clinic, one afternoon period.
Gynecology, clinical, one afternoon period.
Internal Medicine, clinical, two afternoon periods.
Genito-urinary Clinic, one afternoon period.
Rectal Clinic, one afternoon period.
Pediatrics, clinical, one afternoon period.
Massage, one afternoon period.
Operative Surgery, one afternoon period.
Jurisprudence, Wednesday, at 5.

*Second Term, Elective Work:*

Each student must take enough elective work to bring his total to eighteen hours.

## Courses of Instruction.

### ANATOMY.

Associate Professor SUDLER.
Doctor EUGENE SMITH.

EQUIPMENT.

The department occupies the lower floor of Medical Hall and uses the lecture-room on the floor above. The dissecting-rooms are well lighted and comfortable. A reference library, models and specimens are provided. Students are furnished with a skeleton and well-preserved dissecting material, for which a fee is charged covering the actual cost of the material consumed. They are expected to furnish dissecting instruments and two gowns for use in the dissecting-room.

1.—DESCRIPTIVE ANATOMY. Seven hours, 1st term, daily, 8 to 12:15. The first two weeks are occupied by a study of osteology. This is intended as an introduction to the study of anatomy. The vertebral column is considered from a morphological standpoint, and the various bones studied by means of drawings and modeling. The balance of the term is devoted to dissection of the arm and leg and study of the various preparations and models illustrating these parts.

2.—DESCRIPTIVE ANATOMY. Eight hours, 2d term, daily, from 8 to 12:15. During this term the abdomen, thorax and head are carefully dissected and studied. This course is simply a continuation of course 1.

3.—THE CENTRAL NERVOUS SYSTEM. Four hours, 1st term, (*a*), daily, 8 to 12:15. This is a study of the gross anatomy of the cord and brain by means of dissections, sections, and models. The various nuclei of the cranial nerves and the most important tracts of the cord and brain are considered.

4.—OPTIONAL WORK FOR ADVANCED STUDENTS. This work is done individually, and is arranged to suit the needs and ability of the student. In a large measure, it will consist of a study of cross-sections, special dissections, and preparation of anatomical material.

## BACTERIOLOGY AND PATHOLOGY.

Associate Professor BARBER.
Associate Professor EMLEY.
Doctor CHAMBERS.

1.—BACTERIOLOGY. Five hours. Bacteriological technique and the study of pathogenic bacteria from a medical and diagnostic point of view. A laboratory and didactic course. First term, daily, 1:30 to 3:30. Required of second-year students. Associate Professor Emley.

2.—INTRODUCTION TO PATHOLOGY. Three hours. A course of lectures, Mondays, at 3:30, during the first term; and Mondays and Fridays, at 3:30, during the second term. Required of second-year students. Doctor Chambers.

3.—GENERAL PATHOLOGY. Five hours. A laboratory and didactic course. Two hours each day during the second term, 1:30 to 3:30. Required of second-year students. Associate Professor Emley.

4.—ADVANCED BACTERIOLOGY AND PATHOLOGY. Five hours. Open to medical students who have had sufficient preparation. Professor Barber and Associate Professor Emley.

See, also, Pathology (clinical).

## CHEMISTRY.

Professor BAILEY.
Associate Professor CADY.
Assistant Professor MCFARLAND.
Assistant Professor BUSHONG.

1.—GENERAL CHEMISTRY. Laboratory work three afternoons each week, and lectures two afternoons, from 1 to 3. In this course special attention is given to the development of the laws that underlie the theories of chemistry, and those theories are illustrated by a study of the similar elements. This is followed by a study of the combination of the elements. The course with the non-metallic elements is followed by a careful study of the metals, including their source, methods of preparation, properties, uses, and the uses of the compounds in the arts and in medicine. The study of methods for writing reactions and of chemical problems is carried on in connection with the daily lectures and recitations. In the laboratory work, the student first learns the simpler problems of chemical manipulation, then the practical methods of preparing the ordinary elements, and afterwards of the acids, ammonia, etc. Frequent recitations are held, in order to show the proficiency of the student, and a final examination determines his knowledge of

the whole subject. Text-book, Remsen's Chemistry. 1st term, daily, 1:30 to 3:30. Assistant Professor Bushong and assistant.

2.—ORGANIC CHEMISTRY. (Same as course 17, the College.) Lectures and recitations five times per week. The course in organic chemistry is a continuation of the course in general chemistry. The lectures will treat of the occurrence, methods of preparing and the properties of the various classes of organic compounds; as, the hydrocarbons, alcohols, ethers, aldehydes, sugars, starches, etc. 2d term, daily, 3:30 to 5:30. Assistant Professor Bushong and assistant.

3.—QUALITATIVE ANALYSIS. (Same as course in pharmacy.) This course covers the general methods for the detection and separation of the metals and acids. This is largely carried on by laboratory work, with occasional lectures on the theory. Five exercises per week, throughout the second term. This course is not accepted for College or engineering credit. 2d term, daily, 1:30 to 3:30. Assistant Professor McFarland.

4.—TOXICOLOGY. A discussion of the source, properties, methods of detection, *post-mortem* appearances, fatal dose and methods of treatment in case of the inorganic and organic poisons. Lectures, with examinations. One exercise per week, throughout the second term. Professor Bailey.

## DERMATOLOGY.

### (SKIN AND VENEREAL DISEASES.)

Doctor McBRIDE, Doctor FRICK, and Doctor HOLBROOK.

This subject cannot be successfully taught apart from the demonstration of the actual lesions. Therefore the didactic and the clinical instruction are given together in the dispensaries at 918 Independence avenue and St. Joseph's Hospital. The first course is given during the third year, in order that the student may have all the succeeding terms in which to digest and assimilate the information thus given in rather intensive form. The whole subject of syphilis is taught, although any special genito-urinary treatment is referred to that department. The following are the required courses:

1.—BEGINNERS' COURSE. One hour, 2d term. Required of Juniors.

*A.*—Saturday, at 3; Independence avenue. Doctor McBride.

*B.*—Monday, at 3; Independence avenue. Doctor Frick.

*C.*—Wednesday, at 3; St. Joseph's Hospital. Doctors Frick and Holbrook.

2.—Advanced Course. One hour, 1st term. Required of Seniors.

*A.*—Saturday, at 3; Independence avenue. Doctor McBride.

*B.*—Monday, at 3; Independence avenue. Doctor Frick.

*C.*—Thursday, at 3; St. Joseph's Hospital. Doctors Frick and Holbrook.

## GYNECOLOGY.

| | | |
|---|---|---|
| Doctor Beattie. | Doctor Langworthy. | Doctor Sharp. |
| Doctor Hall, C. L. | Doctor Harrelson. | Doctor Smith, J. H. |
| Doctor Hetherington. | Doctor Jones. | Doctor Van Eman. |

Three hours of didactic instruction, two hours of amphitheater clinics and two hours of dispensary clinics are required in this department. The student is introduced to the subject by two hours of lectures in the first term of the Junior year; this is followed by amphitheater clinics in the second term, and by dispensary clinics and practice work in the wards and out-patient department in the Senior year. The effort is made to ally this subject with obstetrics rather than with surgery, and to put the emphasis of the teaching on diagnosis and conservative treatment, rather than on operative technique. Aside from the faculty enumerated above, gynecologic surgery is demonstrated by Doctors Hughes, Schauffler and Hyde in their clinics.

1.—Malformations, Diseases and Injuries of the External Generative Organs. Lectures. One hour, 2d term, Saturday, at 11. Elective. Doctor Hetherington.

2.—Malformations, Displacements, Diseases and Injuries of the Vagina and Uterus. Lectures. One hour, 1st term, Monday, at 11. Required of third-year students. Doctor Beattie.

3.—The Ovaries and Uterine Adnexa. Lectures. One hour, 1st term, Wednesday, at 11. Required of third-year students. Doctor Hall.

4.—Out-patient Gynecology. Practice in diagnosis and treatment. One hour, 1st term. Required of fourth-year students. For this work the class is divided into three divisions, the numbers corresponding to the divisions in the other departments.

*A.*—Saturday, at 1; Independence avenue. Doctor Hall.

*B.*—Monday, at 1; Independence avenue. Doctor Beattie.

*C.*—Tuesday, at 1. Doctor Hetherington.

5.—Same. 2d term. Required of fourth-year students.

*A.*—Saturday, at 1; Independence avenue. Doctor Hall.

*B.*—Monday, at 1; Independence avenue. Doctor Beattie.

*C.*—Friday, at 1. Doctor Hetherington.

6.—Amphitheater Clinics at St. Joseph's Hospital. Credit for each number, one-half hour. Both terms. Third-year students are expected to take *A* and *B*. Fourth-year students are expected to take *C*, or its equivalent.

*A.*—Tuesday, at 9. Doctor Beattie.
*B.*—Tuesday, at 10:30. Doctor Hall.
*C.*—Thursday, at 10:30. Doctor Harrelson.

7.—Gynecologic Diagnosis. A review of gynecology, for those who have had courses 1–3, or their equivalent. Lectures. One hour, 1st term. Required of fourth-year students. Wednesday, at 10. Doctor Langworthy.

## HISTOLOGY AND EMBRYOLOGY.

Associate Professor McClung.
Assistant Professor Baumgartner.

For equipment, see page 91.

1.—Histology, or Microscopical Anatomy. Five hours. 1st term, Monday, Wednesday, and Friday; 2d term, Tuesdays and Thursdays, 3:30 to 5:30. Microscopical manipulation, the study of normal tissues and the methods of preparing mounted objects are presented in this course. Lectures and laboratory work. Required of first-year medical students. Assistant Professor Baumgartner.

2.—Embryology. Two hours. 1st term, Tuesdays and Thursdays, 3:30 to 5:30. The general principles of ontogenetic development, with special application to man. Lectures, text-book work, and laboratory exercises. Required of second-year medical students. Associate Professor McClung.

## HISTORY OF MEDICINE.

Doctor Morse.

1.—Sixteen Lectures on the History of Medicine. Friday, at 3:30, during the first term. Required of second-year medical students. Doctor Morse.

## HYGIENE.

Professor Hoxie.
Doctor Hardin.

In this most important subject at present didactic instruction only is given, of which two hours are required. As this era is one of preventive medicine, hygiene is the subject most important to the general practitioner.

1.—A Study of the Principles of Preventive Medicine. Two hours, Monday and Friday, at 10, 1st term. Doctor Hardin.

2.—Immunity and the Sera. One hour, Monday, at 10, 2d term. Professor Hoxie.

## INTERNAL MEDICINE.

| | | |
|---|---|---|
| Doctor Bruehl. | Doctor Laning. | Doctor Wood. |
| Doctor Chambliss. | Doctor Lutz. | Doctor Abrams. |
| Doctor Hoxie. | Doctor Miller. | Doctor Castelaw. |
| Doctor Murphy. | Doctor Naismith. | Doctor Jacobs. |
| Doctor Schauffler, E.W. | Doctor Sterrett. | Doctor King. |
| Doctor Sloan. | Doctor Talbot. | Doctor Zugg. |
| | Doctor Wolf. | |

This department covers the work in physical diagnosis and the so-called "practice." It begins its work in the second year of medical work with a course on general pathology and therapeutics, by Doctor Chambers (scheduled under bacteriology), and a course of practical exercises in physical diagnosis, by Professor Naismith. This latter course deals especially with the normal, and leads the students to fix in their own minds a standard by which to measure abnormalities later on. Professor Naismith utilizes for illustrative material practically the whole male student body in the gymnasium at Lawrence. During the first term of the third year five lectures and one clinic, with two practical exercises in physical diagnosis, are given weekly. In the second term one lecture and two practical exercises are required. In the fourth year they are expected to take the lectures in dietetics and the ward classes and two dispensary clinics each term. Special attention is called to the ward classes in St. Margaret's and the Eleanor Taylor Bell Hospital, since they afford the most valuable form of instruction for advanced students.

1.—Physical Diagnosis. Principles and methods of physical diagnosis; practice in inspection, palpitation, percussion and auscultation of the normal body, so that the conditions and sounds in health may become familiar to the student; abnormal cases will be introduced for comparison. The class will work in sections in the examining room. The methods will be similar to those used in life-insurance and army examination. Tuesday and Thursday, at 3:30. 2d term. Required of second-year medical students. Professor Naismith.

2.—Diseases of Metabolism. Lectures. One hour, 1st term, Monday, at 10. Required of third-year students. Doctor Murphy.

3.—Diseases of the Gastro-intestinal Tract. Lectures,

One hour, 1st term, Tuesday, at 10. Required of third-year students. Doctor Wolf.

4.—Diseases of the Chest. Lectures. Two hours, 1st term, Wednesday and Friday, at 10. Required of third-year students. Doctor Sloan.

5.—Infective Diseases. Lectures. One hour, 1st term, Thursday, at 10. Required of third-year students. Doctor Wood.

6.—Renal and "Constitutional" Affections. 2d term, Wednesday, at 10. Required of third-year students. Doctor Lutz.

7.—Clinical Instruction in groups, with special reference to diagnosis. Two periods weekly. Two hours' credit. 1st term. Required of third-year students. The divisions are uniform with those in other departments.

*A.*—Wednesday and Friday, at 1:30; Independence avenue. Doctor Murphy.

*B.*—Monday and Saturday, at 2:30; Independence avenue. Doctor Laning.

*C.*—Wednesday and Friday, at 1:30; ——— Hospital. Doctor Wolf.

8.—Same. 2d term. Required of third-year students. Two hours.

*A.*—Monday and Saturday, at 2:30; Independence avenue. Doctors Sloan and Laning.

*B.*—Wednesday and Friday, at 1:30; Independence avenue. Doctor Murphy.

*C.*—Wednesday and Friday, at 1:30; ——— Hospital. Doctor Wolf.

9.—City Hospital Clinic. Saturday, at 8:30. One hour, both terms. Required of third-year students. Doctors Schauffler and Bruehl.

10.—Clinical Instruction. 1st term. For fourth-year students.

*A.*—Tuesday and Thursday, at 3; Independence avenue. Doctor Bruehl.

*B.*—Tuesday and Thursday, at 1:30; St. Joseph's Hospital. Doctor Chambliss.

*C.*—Tuesday, at 3, and Thursday, at 1:30; ——— Hospital. Doctor Sterrett.

11.—Same. For fourth-year students, 2d term. During this term the technique of life-insurance examination is taught.

*A.*—Tuesday and Friday, at 2; Rosedale. ———.

*B.*—Tuesday and Thursday, at 3; Independence avenue. Doctor Bruehl.

*C.*—Tuesday and Thursday, at 1; ——— Hospital. Doctor Sterrett.

12.—Ward Classes. Attendance restricted to fourth-year students and to the number stated with each class. Credit, one hour for each day. These classes are given the fourth year regularly in connection with their work in surgery.

*A.*—Monday, at 8; St. Margaret's. Doctor Miller. (4.)
*B.*—Tuesday, at 8; St. Margaret's. Doctor Talbot. (4.)
*C.*—Wednesday, at 8; St. Margaret's. Doctor Jacobs. (4.)
*D.*—Thursday, at 8; St. Margaret's. Doctor Talbot. (4.)
*E.*—Friday, at 8; St. Margaret's. Doctor Miller. (4.)
*F.*—Saturday, at 8; St. Margaret's. Doctor Jacobs. (4.)

13.—Diagnosis of Diseases of the Abdomen. Lectures. One hour. Fourth year, 2d term. Elective. Monday, at 11. Doctor Wood.

14.—Dietetics. Lectures. One hour. Fourth year, 2d term. Friday, at 9. Elective. Doctor Wolf.

15.—Same. Lectures. Two hours, Monday and Friday, at 9. 1st term. Required of fourth-year students. Doctor Laning.

## MEDICAL JURISPRUDENCE.

Professor Bailey.
Mr. Dean.
Doctor Porter, D. R.

This department of the clinical school contemplates the instruction of the fourth-year students not only in the rights and privileges of the physician, but also in matters relating to expert testimony, malpractice, ethics, and medical organization. Toxicology is taught at Lawrence. *Post-mortem* examinations, their technique and legal status are considered by the department of clinical pathology. Life insurance, however, is a matter taught by this department.

1.—Medical Jurisprudence from the Legal Standpoint. Lectures. One hour, 2d term. Required of fourth-year students. Wednesday, at 5. Mr. Dean and special lecturers.

2.—Life Insurance. Lectures. Credit, one half-hour. 1st term. Wednesday, at 5. Required of fourth-year students. Doctor Porter.

3.—Toxicology. (See chemistry 4.) Required of second-year students. Professor Bailey.

## NERVOUS AND MENTAL DISEASES.

Doctor GODDARD. Doctor GLASSCOCK.
Doctor HANAWALT. Doctor TAYLOR.
Doctor UHLS. Doctor FAUST.

The regular work of this department begins in the second term of the third year, with two required lectures on nervous diseases. This is followed by lectures in the fourth year on psychiatry. But during the fourth year stress is laid on the clinics in connection wlth Grandview Sanitarium and the local hospitals. Besides this, Doctor Uhls takes his students to the State Hospital at Osawatomie, of which he is superintendent; and Doctor Goddard demonstrates patients at the Evergreen Sanitarium, in Leavenworth. Doctor Hanawalt demonstrates nervous diseases at the City Hospital clinic when instructive cases are to be had.

1.—PSYCHIATRY. Lectures. Two hours, 1st term. Required of Seniors. Monday and Friday, at 11. Doctor Goddard.

2.—PSYCHIATRY. Lectures. One hour. Only those who have had some instruction in psychiatry are admitted to this course. Saturday, at 9. Elective. 2d term. Doctor Uhls.

3.—ORGANIC DISEASES OF THE NERVOUS SYSTEM. Lectures. Two hours, 2d term. Required of third-year students. Monday and Friday, at 11. Doctor Hanawalt.

4.—THE NEUROSES. Lectures. One hour, 2d term. Fourth-year students. Friday, at 10. Doctors Glasscock and Faust.

5.—NEUROLOGICAL CLINICS. One hour, 2d term. Required of fourth-year students. In sections:

*A.*—Wednesday, at 1:30; Independence avenue. Doctor Taylor.

*B.*—Wednesday, at 1:30; Doctors Glasscock and Faust.

*C.*—Saturday, at 1:30; Doctors Glasscock and Faust.

## OBSTETRICS.

Doctor MOSHER. Doctor KNIPE.
Doctor HETHERINGTON. Doctor GUFFEY.
Doctor NASON.

The work in this subject begins with three hours of lectures during the first term, third year. In the next term one hour of lectures and two hours of practice on the manikin are given. At the same time the students are put into the service of the outpatient department, where they remain until they have cared for and recorded six births.

1.—NORMAL PREGNANCY AND LABOR. Lectures, quizzes, and

text-book recitations. Three hours, 1st term. Required of third-year students. Tuesday, Thursday, and Friday, at 11.

(*a*).—Pregnancy and the Physiology of Labor. Ten weeks. Doctor Knipe.

(*b*).—Technique of Delivery and Perineal Repair. Remainder of the term. Doctor Hetherington.

2.—Dystocia. Lectures. One hour, 2d term. Required of third-year students. Wednesday, at 11. Doctor Mosher.

3.—Manikin Practice. Two periods weekly during the 2d term. Monday and Friday, at 8. Required of third-year students. Doctor Guffey.

3.—Out-patient Obstetrics. Six births required. Doctors Nason, Knipe, and Guffey.

## OPHTHALMOLOGY AND OTOLOGY.

| | |
|---|---|
| Doctor Fryer. | Doctor Lidikay, |
| Doctor Thompson, | Doctor Look, |
| Doctor Curdy, | Doctor May, |
| Doctor Lichtenberg, | Doctor Schutz, |

The work of this department begins during the second term of the third year with course 1. This is followed by one period of clinical instruction in each of the following terms. Besides this required work, abundant opportunity is offered for special students and postgraduates.

The department has at its disposal a dark room and also a large demonstration room in the Independence avenue dispensary equipped with trial cases, instruments, magnets, etc., sufficient for the treatment of all but the most difficult cases. At Bethany Hospital, there is given a three-hour clinic on Monday afternoon, at which Doctors Lidikay, May and Schutz demonstrate their cases. The well-attended eye clinic at St. Joseph's Hospital is also utilized by the school and clinics are given there on Wednesday afternoon.

1.—Elementary Ophthalmology. Lectures, 2d term, Tuesday and Thursday, at 5. Doctor Curdy. (For 1906 this will be given, 1st term, also Wednesday and Friday, at 4.)

2.—Clinical Ophthalmology, in groups. 1st term. Required of fourth-year students. Two hours.

*A.*—Monday, at 1; at Independence avenue. Doctors Fryer and Lichtenberg.

*B.*—Saturday, at 2; at Independence avenue. Doctors Thompson and Look.

*C.*—Monday, at 1; ——— Hospital. Doctors Schutz, Lidikay, and May.

3.—Same. 2d term. Required of fourth-year students.

*A.*—Monday, at 1; Independence avenue. Doctors Fryer and Lichtenberg.

*B.*—Tuesday, at 2; Independence avenue. Doctor Thompson.

*C.*—Monday, at 1; ——— Hospital. Doctors Schutz, Lidikay, and May.

4.—Diseases and Injuries of the Ear. Lectures. One hour, 1st term, Wednesday, at 11. Required of fourth-year students. Doctor Look.

## PATHOLOGY (CLINICAL).

Associate Professor F. J. Hall.
Doctor Trimble.
Doctor Hunt.

This department continues at Kansas City the work begun by the department of bacteriology and pathology at Lawrence, and is regarded as the basic study of the clinical department. Therefore, the work is required during the whole Junior year and in the Senior year until clinical and microscopical diagnosis is completed.

The work is almost exclusively in the laboratory and dead-room. This has made it necessary for the University to deal very generously with the department. It is provided with large laboratory space, morgue, animal-room, library, and other research-rooms. Each student is furnished with an oil-immersion lens, desk, and locker. He purchases his own glassware and stains.

Great stress is laid upon the ability to describe orally, in writing and by drawings the lesions and conditions found in the necropsies. Each student is expected to take part in conducting and recording four *post-mortem* examinations. He is expected to fix, stain and mount his own specimens. His note-books and protocols are used as a basis upon which to estimate the student's ability and industry.

1.—Post-mortem Pathology. A laboratory course, on Tuesday and Thursday afternoons of each week during the 1st term. This course will include *post-mortem* technique, gross pathology, morbid histology, and clinical bacteriology. Required of third-year students. Four hours. Associate Professor Hall and Doctor Trimble.

2.—Advanced Post-mortem Pathology. A continuation of course 1, on Tuesday and Thursday afternoons during the 2d term. Four hours. Associate Professor Hall and Doctor Trimble.

3.—Microscopical and Clinical Diagnosis. A laboratory

course. Two afternoons each week, 1st term, Wednesday and Friday. Four hours. Required of fourth-year students. Associate Professor Hall.

4.—SPECIAL TECHNIQUE. A laboratory course for advanced students. One afternoon each week. Two hours, 2d term. Associate Professor Hall.

(See, also, Bacteriology.)

## PEDIATRICS.

Doctor KYGER. Doctor LESTER.
Doctor WEISS. Doctor GOLDMAN.

The work of this department begins during the second term of the year with a course of lectures, and is continued throughout the fourth year with section clinics, one each week.

1.—DISEASES OF NUTRITION. Lectures. 1st term, Saturday, at 11. Doctor Kyger.

2.—LECTURES. Children's diseases exclusive of those due to malnutrition. One hour, 2d term, Wednesday, at 9. Required of second-year students. Doctor Kyger.

3.—CLINICAL INSTRUCTION, in sections. One hour, 1st term. Required of fourth-year students.

*A.*—Tuesday, at 1; Independence avenue. Doctor Weiss.
*B.*—Tuesday, at 3; St. Joseph's Hospital. Doctor Goldman.
*C.*—Saturday, at 1; ——— Hospital. Doctor ———

4.—SAME. 2d term. Required of fourth-year students.

*A.*—Wednesday, at 3; Independence avenue. Doctors Lester and Goldman.
*B.*—Tuesday, at 1; Independence avenue. Doctor Weiss.
*C.*—Tuesday, at 3; Independence avenue. Doctor ———

## PHARMACOLOGY AND THERAPEUTICS.

| *At Lawrence.* | *At Kansas City.* | |
|---|---|---|
| Professor SAYRE. | Professor HOXIE. | Doctor SANDZEN. |
| Asst. Prof. HAVENHILL. | Doctor GAYLE. | Doctor SCOTT. |
| Mr. EMERSON. | Doctor LONGENECKER. | Doctor TROUTMAN. |
| | Doctor CLARK. | |

The department takes the student in his second year and teaches him to recognize, handle and know the properties of all the more important drugs. In the third year, during the second term, he is taught the use of drugs in the sick-room. Courses are also provided for the fourth year, so that no student has excuse for ignorance in the matter of materia medica.

This department also presents to the students the important subjects of mechanico-, balneo-, electro- and phototherapeutics. These branches, which are daily becoming more important to the practitioner, are at present in the fourth year. No student should graduate without having taken courses 8 and 10.

1.—Physiological and Medical Chemistry. Five hours, 1st term, 1:30 to 3:30. This course is offered to meet the requirements of medical students. Products of physiological interest are separated from animal tissues and organs and studied in detail. Special attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second part of the course consists of five weeks of urinalysis, embracing lectures, recitations, and work in both chemical and microscopical laboratories. Required of first-year students. Professor Sayre and Mr. Emerson.

2.—Pharmacology and Materia Medica. Five hours, 2d term, Monday, Tuesday, Wednesday, and Thursday, at 11:15. The chemical and physiological properties of drugs, therapeutical application, methods of prescribing and dispensing, the action of organic and inorganic chemicals and their physiological relationships. Lectures and recitations. Required of second-year students. Professor Sayre.

3.—Pharmacy and Pharmacognosy. Two hours, 1st term, Tuesday and Thursday, 3:30 to 5:30. A special course designed to meet the needs of medical students, comprising weights, measures and processes used in the preparation of medicine; the geographical distribution, physical properties and identification of crude drugs. Lectures, recitations, and laboratory work. Required of second-year students. Assistant Professor Havenhill.

4.—Therapeutics. Lectures in connection with text-book. Two hours, 1st term, Wednesday and Friday, at 5. Elective. Doctor Longenecker.

5.—Therapeutics. Lectures. Two hours, 2d term, Monday and Friday, at 10. Required of third-year students. Professor Hoxie.

6.—Summary of Therapeutics. Lectures. One hour, 1st term, Saturday, at 10. Elective. Doctor Gayle.

7.—Electrotherapy. Ward classes. 2d term. Required of fourth-year students. One-half-hour credit.

*1.* St. Joseph's Hospital, Saturday, 9 to 11. Doctor Scott. First half-term, *D* and *E;* second half-term, *G* and *H.*

*2.* Bethany Hospital, Saturday, 9 to 11. Doctor Clark. First half-term, *F*; second half, *A*, *B*, and *C*.

8.—ELECTROTHERAPEUTICS. Lectures. One hour, 2d term, Friday, at 11. Elective. Doctor Scott.

9.—ELECTROTHERAPY. Clinical instruction, at Bethany. One or two hours, both terms, (*a*) Monday, or (*b*) Thursday, at 4. Elective. Doctor Clark.

10.—MASSAGE. Practical exercises at the Eleanor Taylor Bell Hospital. One hour, 1st term. Elective. Daily, by appointment. Doctor Sandzen.

## RHINOLOGY AND LARYNGOLOGY.

Doctor FOSTER. Doctor ADAMS.
Doctor HALL, D. W. Doctor DAILEY, F. W.
Doctor SAWTELL.

The work of this department is begun during the third year, in the 2d term, and is continued through the 1st term of the fourth year. The didactic and clinical work is all given in the dispensaries. For the advanced student and specialist, Doctor Foster's work at St. Margaret's will prove especially instructive. This is given regularly to fourth-year students in the ward class.

1. CLINICAL INSTRUCTION. 2d term. Required of third-year students. This work is given to groups, who are taught the anatomy and pathology of the parts and the technique of examination and treatment.

*A.*—Monday, at 3; Independence avenue. Doctor Hall.
*B.*—Saturday, at 3; Independence avenue. Doctor Foster.
*C.*—Monday, at 3; ——— Hospital. Doctor Sawtell.

2. SAME. 1st term. Required of Seniors.

*A.*—Monday, at 3; Independence avenue. Doctor Hall.
*B.*—Thursday, at 3; Independence avenue. Doctor Foster.
*C.*—Monday, at 3; ——— Hospital. Doctor Sawtell.

## PHYSIOLOGY.

Professor HYDE.
Mr. HARVEY.
Miss WALLING.

The physiological department is thoroughly equipped with approved modern apparatus for demonstration and experimental work.

Besides a large lecture-room that seats 100 students, it possesses a department library for the use of the students. The library contains the latest reference books and all of the best physiological journals.

The medical laboratory is equipped with specially planned tables, that have gas, water and electrical connections. Each table is supplied with a complete outfit of the best modern apparatus, sufficient for the investigation of hundreds of experiments, and two students are assigned to each table. It also has a large laboratory for the pharmacy and liberal arts students, that contains tables particularly designed for their work. In this laboratory are, besides the needed instruments, digesters, spirometers, kymographs, manometers, and all kinds of electrical apparatus, a skeleton, and a finest French manikin.

The research-room is fitted up with necessary tables, instruments and electrical apparatus for any kind of physiological experiments. There is also a large preparation-room, where most of the material is prepared, and a storeroom.

5.—PHYSIOLOGY. Ten hours. Recitations and lectures, with demonstrations, conferences, and journal cluh, and laboratory experimental work. Required of second-year medical students. Daily throughout the year, 8 to 12:15, 1st term, (*b*); 8 to 11:15, 2d term. Professor Hyde.

6.—PHYSIOLOGY. Five hours. Graduate course. Experimental physiology and original research. Open to students who have taken not less than a year of anatomy and physiology and have given evidence that they are prepared for it. Professor Hyde.

## SURGERY.

| | | |
|---|---|---|
| Doctor BINNIE. | Doctor ROBINSON. | Doctor SIMMONS. |
| Doctor FRICK, W. J. | Doctor SCHAUFFLER, R. McE. | Doctor STEMEN. |
| Doctor GRAY. | Doctor BLAIR. | Doctor ROBERTS. |
| Doctor GRIFFITH. | Doctor COFFIN. | Doctor LOWMAN. |
| Doctor HUGHES. | Doctor HAMEL. | Doctor WILKINSON. |
| Doctor PERKINS. | Doctor HYDE, B. C. | Doctor BARNEY. |

General surgery is begun in the second year, with a weekly lecture on surgical pathology and principles. In the first term of the third year, five hours of lecture and one amphitheater clinic are given. In the second term, two lectures and two clinics are required. In the fourth year, ward classes and classes for practice on the cadaver are provided. The opportunities for seeing good surgery are specially abundant, there being clinics in all five hospitals connected with the school.

1.—SURGICAL PRINCIPLES. A course of lectures. One hour each week during both terms, discussing the principles of asepsis in surgery, repair of divided tissues, conditions of regeneration, etc. Required of second-year medical students. Throughout the year. Doctor Simmons (Lawrence).

2.—SURGERY of the Abdomen. Lectures. One hour, 1st term, Monday, 9 to 10. Required of third-year students. Doctor Binnie.

3.—SURGERY of the Head and Neck. Lectures. One hour, 1st term, Friday, 9 to 10. Required of third-year students. Doctor Binnie.

4.—SURGERY of the Thorax, Spine, Nerves, Muscles, Tendons, Bursæ, etc. One hour, 1st term, Wednesday, 9 to 10. Required of third-year students. Doctor Schauffler.

5.—SURGERY of Tumors, Lymphatics and Blood-vessels, Bones, and Joints. Lectures. Two hours, 1st term, Tuesday and Thursday, 9 to 10. Required of third-year students. Doctor Robinson.

6.—SURGERY of the Extremities. Lectures. Covering fractures and dislocation of joints, amputation, resection, etc. One hour, 2d term, Monday, 9 to 10. Required of third-year students. Doctor Blair.

7.—SURGICAL DIAGNOSIS. Lectures with practical demonstrations. One hour, both terms, Friday, at 8. Required of fourth-year students. Doctor Perkins.

8.—SURGERY OF THE ABDOMEN. Lectures. One hour, 2d term, Monday, at 9. Doctor Coffin.

9.—CLINICAL INSTRUCTION in the out-patient department. Special attention is given to bandaging and dressing. One hour, 2d term. Required of third-year students.

*A.*—Friday, at 1; Independence avenue. Doctor Blair.

*B.*—Monday, at 1; Independence avenue. Doctor Blair.

*C.*—Saturday, at 1; ——— Hospital. Doctor Wilkinson.

10.—SAME, in groups. One hour, 2d term. Required of fourth-year students.

*A.*—Thursday, at 1; Independence avenue. Doctor Blair.

*B.*—Saturday, at 3; Independence avenue. Doctor ———

*C.*—Tuesday, at 4; ——— Hospital. Doctor Wilkinson.

11.—OPERATIVE TECHNIQUE. Laboratory work. One hour, 1st term. Required of fourth-year students. (Special fee, $5.)

*A.*—Monday, at 4; Independence avenue. Doctor Robinson.

*B.*—Thursday, at 4; Independence avenue. Doctor Binnie.

*C.*—Monday, at 4; Rosedale. Doctor Schauffler.

12.—SAME. One hour, 2d term. Required of fourth-year students. (Special fee, $5.)

*A.*—Monday, at 4; Independence avenue. Doctor Robinson.

*B.*—Friday, at 4; Independence avenue. Doctor Binnie.

*C.*—Tuesday, at 4; Independence avenue. Doctor Schauffler.

13.—AMPHITHEATER CLINIC. Credit, one hour, both terms, Saturday, at 10. City Hospital. Required of third-year students. Doctors Griffith, Block, Coffin, and Schauffler.

14.—SAME, in conjunction with operative gynecology. One-half hour, 2d term, Tuesday, at 11. St. Joseph's Hospital. Required of third-year students. Doctor Coffin.

15.—SAME. Credit, two hours, 1st term. Required of fourth-year students. The following operators must be registered for:

*A.*—Tuesday. Doctor Frick at St. Joseph's.

*B.*—Thursday. Doctor Griffith at St. Joseph's, or Doctor Hughes at Bethany.

16.—SAME. Credit, three hours, 2d term. Required of fourth-year students. These clinics may be taken at St. Joseph's or Bethany. The following operators take charge:

*A.*—Wednesday, at 9. Doctor Frick at St. Joseph's, or Doctor Robinson at Bethany.

*B.*—Wednesday, at 10:30. Doctor Binnie at St. Joseph's, or Doctor Schauffler at Bethany.

*C.*—Thursday, at 8. Doctor Griffith at St. Joseph's, or Doctor Hughes at Bethany.

17.—WARD CLASSES, at St. Margaret's. 1st term. (For this work, the class is divided into groups of four, and each group put on duty for two weeks at a time, being excused at that time from all other work.) Credit, one hour. Required of fourth-year students.

*A.*—Sept. 10 to 24.
*B.*—Sept. 24 to Oct. 8.
*C.*—Oct. 8 to 22.
*D.*—Oct. 22 to Nov. 5.
*E.*—Nov. 5 to 19.
*F.*—Nov. 19 to Dec. 3.
*G.*—Dec. 3 to 17.
*H.*—Dec. 17 to Jan. 14.

18.—WARD CLASSES for fourth-year students. 2d term. Credit, one hour. (These classes last only one-half term.) Required.

1. St. Margaret's Hospital, Monday and Friday, 8 to 10. Doctor Gray, *A*, then *D*.
2. St. Margaret's Hospital, Tuesday and Thursday. Doctor Perkins, *B*, then *E*.
3. St. Margaret's Hospital, Wednesday and Saturday. Doctors Blair and Lowman, *C*, then *F*.
4. Missouri Pacific Hospital, Tuesday and Thursday, at 9. Doctor Hamel, *G*, then *B*.

5. Bethany Hospital, Tuesday and Thursday. Doctor Hughes, *A* and *C*, then *G* and *H*.
6. St. Joseph's Hospital, Saturday, 9 to 11. Doctor Frick, *A* and *B*, then *D* and *E*.
7. German Hospital, Tuesday and Thursday, 9 to 11. Doctors Hyde and von Quast, *E* and *F*, then *A* and *C*.

## ORTHOPEDIC SURGERY.

Doctor SPAULDING.
Doctor VON QUAST.

One required lecture is given during the 2d term, third year. Otherwise work is elective.

19.—ORTHOPEDIC SURGERY. Lectures and demonstrations. One hour, 2d term, Friday, at 9. Required of third-year students. Doctor Spaulding.

20.—SAME, Lectures. One hour, 1st term, Saturday, at 9. Elective. Doctor von Quast.

21.—ORTHOPEDIC DEMONSTRATIONS. One hour, 2d term, Friday, at 3. 918 Independence avenue. Elective. Doctor Spaulding.

## GENITO-URINARY SURGERY.

Doctor BLOCK. Doctor HARRINGTON.
Doctor TREXLER.

This subject is given by a required lecture, 1st term, fourth year. Additional lectures are provided in the 2d term, fourth year. The principal instruction is offered at the dispensaries, where all the minor operations are performed.

22.—GENITO-URINARY SURGERY. Lectures. One hour, 1st term, Wednesday, at 9. Required of fourth-year students. Doctor Block.

23.—SAME. One period a week of practical work, 2d term. Required of fourth-year students.

*A.*—Thursday, at 1. Doctor Block.
*B.*—Friday, at 1. Doctor Harrington.
*C.*—Wednesday, at 1. Doctor Trexler.

## RECTAL SURGERY.

Doctor THRAILKILL. Doctor MORROW.
Doctor COFFEY. Doctor ROBERTS.

This work is given only in connection with clinical demonstrations. Doctor Thrailkill shows operations at St. Joseph's Hospital

on Thursdays, at 11; and Doctor Coffey at the German Hospital, on Thursday mornings.

24.—RECTAL SURGERY. Lectures. One hour, 2d term, Monday, at 9. Doctor Morrow.

25.—SAME. A practical course, including the necessary didactic instruction. One hour, 2d term, Doctor Thrailkill. Required of fourth-year students.

26.—SAME.

*A.*—Thursday, at 3; Independence avenue. Doctor Thrailkill.

*B.*—Saturday, at 1; Independence avenue. Doctor Coffey.

*C.*—Wednesday, at 3; ——— Hospital. Doctor Roberts.

# VIII. The Summer Session.

## Faculty.

FRANK STRONG, Ph. D., Chancellor, and President of Faculty.

ARTHUR T. WALKER, Ph. D., Director of the Summer Session. Professor of Latin Language and Literature.

JAMES W. GREEN, A. M., Professor of Law.

CARL A. PREYER, Professor of Piano, Counterpoint, Canon, and Fugue.

OLIN TEMPLIN, A. M., M. S., Professor of Philosophy.

EDWIN M. HOPKINS, Ph. D., Professor of Rhetoric and English Language.

ERASMUS HAWORTH, Ph. D., Professor of Physical Geology, Mineralogy, and Mining.

WILLIAM C. STEVENS, M. S., Professor of Botany.

ARVIN S. OLIN, A. M., Professor of Education.

WILLIAM A. GRIFFITH, Professor of Drawing and Painting.

EUGÉNIE GALLOO, A. M., Professor of Romance Languages and Literatures.

WILBUR C. ABBOTT, B. Litt., Professor of European History.

HENRY B. NEWSON, Ph. D., Professor of Mathematics.

JAMES NAISMITH, M. D., Associate Professor of Physical Training, and Chapel Director.

SAMUEL J. HUNTER, A. M., Associate Professor of Entomology.

MILES W. STERLING, A. M., Associate Professor of Greek.

WILLIAM E. HIGGINS, B. S., LL. B., Associate Professor of Law.

CLARENCE E. MCCLUNG, Ph. D., Associate Professor of Zoölogy.

SELDEN L. WHITCOMB, A. M., Associate Professor of English Literature.

HAMILTON P. CADY, Ph. D., Associate Professor of Chemistry.

EDGAR G. FRAZIER, Ph. B., Associate Professor of Public Speaking and Debate.

MARTIN E. RICE, M. S., Assistant Professor of Physics and Electrical Engineering.

FRANK E. WARD, Superintendent of Fowler Shops and Shop Instruction.

RALPH W. CONE, A. M., Assistant Professor of Sociology and Economics.

ALBERTA L. CORBIN, Ph. D., Assistant Professor of German.

JOHN N. VAN DER VRIES, Ph. D., Assistant Professor of Mathematics.

CARL L. BECKER, B. L., Assistant Professor of European History.

RALPH E. BASSETT, A. M., Assistant Professor of Romance Languages.

DAVID F. MCFARLAND, A. M., Assistant Professor of Chemistry.

HENRY O. KRUSE, A. M., Assistant Professor of German.

GEORGE W. HANSON, Forge and Foundry Instructor.

FRANK E. JONES, Instructor in Carpentry.

HARRIET GREISSINGER, Mus. B., Instructor in Piano.

HERBERT W. EMERSON, Ph. C., Instructor in Pharmacy.

BLANCHE LYONS, Assistant Instructor in Voice.

LARRY M. PEACE, A. B., Preparator and Demonstrator in the Botanical Laboratory.

## Purposes of the Summer Session.

In accordance with a general desire to increase the usefulness of the University and bring its resources nearer to the people of the state, the Summer Session was established to meet the demands of the following classes:

1. Instructors in other colleges who may wish the opportunity of further study and of observing the work in their subject as pursued at the University of Kansas.

2. City and county superintendents, principals, and teachers, especially those having work of high-school grade, to enable such to review their work, to become familiar with the latest and best methods, and thus prepare to do their own work better.

3. Students preparing to enter the University, to enable such to complete their preparation.

4. University students, whether already matriculated or coming for the first time into membership in the University, to enable such to correct irregularities in their standing or to attain standing in the University.

5. Graduate students, especially such as have already completed a portion of their work for the second degree and are prevented by regular employment from attending University during the other sessions.

6. Intelligent people in all walks of life who wish to enlarge their intellectual horizon, to renew or review college studies of earlier years, to get into touch with current scholarship, and who may be inclined to spend a vacation from the regular tasks of life at this pleasant seat of learning.

### A Cool Place for Summer Work.

The chief objection that has been urged against the Summer Session is the claim that the climate of Kansas in summer is too oppressive for intense mental exertion. But a comparison of conditions with those in neighboring states leads to the conclusion that the heat of Kansas is no more trying than that of Indiana or Missouri. Moreover, there is no cooler place in all Kansas in summer than the breezy heights of Mount Oread. The heavy walls of the buildings, the plentiful shade of the campus and the perpetual breeze make this the most suitable place in the state for intellectual work during the summer. Furthermore, it is noted that the teachers of Kansas have for years and by thousands endured the heat

and the pressure of summer institutes, and the Summer Session at the University will be a moderate trial in comparison. As the Summer Session lasts only six weeks, there is no reason to fear that the work will exhaust either instructors or students. Precautions are taken to prevent enthusiastic students from undertaking too much work. The University is supplied with distilled water, and the city supply has often been analyzed and found germ-free.

For description of buildings and grounds, see pages 40–44.

### Attendance and Results.

The Summer Session has completed its third year, and the attendance and quality of work have justified the experiment. The attendance has grown as follows: In 1903, 135; in 1904, 169; in 1905, 238. This means a steady and healthy growth, which the University confidently expects to continue. The work has proven to be of good quality.

In 1906, with the introduction of the hour system, a slight increase is made in the maximum amount of credit that may be attained—six hours, instead of five—and the work is no longer restricted, as heretofore, to one subject.

## Equipment for the Summer Session.

The Summer Session will command the entire equipment of the library of 50,000 volumes, and the laboratories of the University.

The work in botany, entomology, zoölogy and geology is supported by the cabinet collections, which contain upward of 250,000 specimens, and by ample laboratories.

Physics, chemistry and pharmacy are taught in separate and well-furnished buildings, with commodious laboratories for special research as well as for classroom work, and supplied with much valuable modern apparatus.

The Greek and Latin departments have at their command a large number of casts, photographs, plates and stereopticon slides of ancient views, portraits, buildings, statues, paintings, vases, and manuscripts.

The departments of history and modern languages are provided with wall maps and charts, and a considerable collection of photographs. All departments use the stereopticon for illustrating lectures.

The department of mathematics has a large collection of mathematical models of the best German make.

The University library is in the Spooner Library building. It is

open every day of the year, excepting Sundays and legal holidays. Library hours during the Summer Session are eight A. M. to twelve M., and one P. M. to five P. M.; Saturdays, eight A. M. to twelve M.

Liberal facilities for using the library are offered to all members of the University. All books, except reference books and books too rare to be easily replaced, may be taken from the library for three weeks.

**Gymnasium and Out-of-door Sports.**

The University gymnasium, with lockers and bath-rooms, will be open during the Summer Session for the use of the students. Doctor Naismith, director of physical training, will conduct courses in physical training with reference to public-school needs, and will also direct outdoor sport. The Kansas river affords a fine boating course, the golf links adjoin the campus, tennis courts are available, and McCook Field will furnish excellent grounds for baseball and track events.

# Admission to Summer Session.

The classes of the Summer Session are open to all who can satisfy the instructors that their preparation is sufficient to enable them to do the work properly; that is, a student may register in the Summer Session and attend its classes without matriculating in the University. *But University credit is given only to those who are regularly matriculated in the University.* A record is kept of the work of those who are not matriculated, and if they matriculate in the future they will receive credit for their work in the Summer Session.

### Matriculation.

Students who desire to matriculate in the summer must meet the same requirements for admission as are in force during the regular sessions.

### Registration.

The days of registration are Monday, Tuesday, Thursday, Friday, Saturday, and Monday, June 4, 5, 7, 8, 9, and 11. After June 11 no registration for credit will be allowed except by special permission of the Director. Since the Summer Session is short at best, it is strongly urged that all students be present on the opening day, June 7. On that day it is expected that classroom exercises will begin in all courses. Regular classroom exercises will be held on Friday, June 8, and also on Saturday, June 9, but on no other Saturday of the session.

### Fees and Expenses.

The fee for Kansas students for the Summer Session will be ten dollars, for non-residents, fifteen dollars, which will cover admission to all courses excepting those in music. For certain laboratory courses there will be, in addition, the cost of materials.

The regular matriculation fee is five dollars, payable but once. Students in the Summer Session are not required to pay this fee, but will be required to do so if they afterwards attend the regular sessions of the University.

### Amount of Work.

No student may receive more than six hours credit for work in the Summer Session. The amount of credit given for each course is indicated in the statement of that course. In non-laboratory courses credit is given at the ratio of two hours credit for one hour of classroom work per day. In such courses, therefore, the full work of a student for credit is three hours a day, and no student will be enrolled for more than that. Rather more time must be spent in preparation for the classroom exercises than during the regular sessions. A student may, therefore, enroll for credit in no more than

One five-hour course,
One three-hour and one two-hour course,
Two three-hour courses, or
Three two-hour courses.

Students who do not enroll for credit will be registered for no more work than others, but written permission may be given them to attend one other class as regular visitors. But it is believed that even those who do not desire credit will be most benefited by their summer's work if they confine themselves to the work for which they are enrolled.

### Nature of Courses.

The courses offered in the Summer Session are for the most part courses which are offered in the regular sessions, or modifications of such courses. Most of the courses have been selected with a view to meeting the wishes of teachers, and many of them have been modified in some details for the same purpose. But such modifications are not so great as to make the course unsuitable for students who do not intend to teach; nor do they lower the grade of the work.

Regular students of the University must be on their guard against duplicating work. Some of the Summer Session courses, while not exactly equivalent to regular courses, are so nearly equivalent to them that credit will not be given for both. In such cases a warning is given in the statement of the course by the words, "This course will be regarded as a duplicate of ——." Students who have had the regular course may not take for credit the Summer Session course. Students who take the Summer Session course will be barred in the future from the regular course.

A few courses are offered only on condition that the demand warrants them. In each case this is indicated in the statement of the course. All other courses are offered regardless of the number

applying for them, and intending students may feel confident that they will be given. Not quite all of the courses which depend on the demand can be given. None of them will be given for less than six students. Probably those which have a sufficient number of registered students by Saturday night, June 9, will be regarded as established, and the rest will be removed from the list of possibilities. In deciding on the courses to be retained, no student will be counted unless his fees are paid and he is regularly registered. Fees will be returned if the class is not given and the applicant wishes to enter no other class.

**Lectures.**

At five o'clock of every working-day of the Summer Session there will be a lecture, open to all who have paid the general fee for the Summer Session. Twenty of these lectures will be given, in two series of ten each, by scholars from other universities; the remainder will be by members of the University Faculty.

June 8 to 15. Prof. Edwin Grant Dexter, director of the school of education, University of Illinois. On some days Professor Dexter will lecture twice, giving in all a series of ten lectures on educational problems.

June 18 to 29. Prof. John M. Coulter, head of the department of botany in the University of Chicago, and editor of the *Botanical Gazette.*

July 2. Professor Abbott. "English Universities."

July 3. Professor Hopkins. "Recent Developments in the Teaching of English."

July 5. Professor Stevens. "Gardens and Gardening."

July 6. Professor Griffith. "Modern Painters of Biblical Pictures" (illustrated).

July 9. Professor Olin. "A Famous Book and its Author" (illustrated).

July 10. Professor Galloo. "Monuments of Paris (illustrated).

July 11. Professor Becker. "Memoirs of Bachaumont."

July 12. Professor Naismith. "The Place of Play in Education."

July 13. Professor Templin. "The Problem of Religion and the Public Schools."

July 16. Professor Cady. "Liquid Air" (illustrated).

### Chapel.

Religious exercises are held in the University chapel from 10:00 to 10:15, and on Friday morning from 10:00 to 10:30. Though attendance at chapel is not required of students, all are cordially invited, and the services are made as attractive and profitable as possible. They consist of Scripture reading, hymns, prayer, and occasional brief addresses.

### Summer Session Christian Association.

The Summer Session Christian Association is composed of both men and women, students and instructors. It fills essentially the same field as is filled during the rest of the year by the Young Men's Christian Association and the Young Women's Christian Association. Regular weekly meetings are held.

# List of Courses.

The Summer Session courses offered by each department are numbered consecutively with Roman numerals. Arabic numerals refer to the courses as numbered in the General Catalogue of 1904–1905. For example, I (=2) means that course I of *this* catalogue is identical with course 2 of the General Catalogue. I (nearly =2) means that course I of *this* catalogue is a modification (generally a condensation) of course 2 of the General Catalogue.

All classes meet five days a week, Monday to Friday, and also on Saturday, June 9.

## BOTANY.

I (=1).—Elementary General Morphology. Two hours credit. 7:30 to 9; other hours by arrangement. An introduction to the forms and parts of plants. Laboratory work twelve hours a week; reading, recitations, and lectures. Professor Stevens.

II (=2).—Elementary Plant Ecology. Three hours credit. 7:30 to 9; other hours by arrangement. A study of the ways in which the parts and organs of plants conform to their environment in the performance of their functions. Laboratory and field-work eighteen hours a week; reading, recitations, and lectures. Professor Stevens.

III (=4).—Plant Histology. Three hours credit. 8 to 9; other hours by arrangement. A study of plant tissues with special reference to their development and functions. Laboratory work eighteen hours a week; reading, recitations, and lectures. Professor Stevens.

IV (=5).—Elementary Plant Physiology. Two hours credit. 8 to 9; other hours by arrangement. An experimental study of the functions of plant tissues and organs. Especially designed to accompany or supplement course III. Laboratory work twelve hours a week; lectures and reports. Professor Stevens.

## CHEMISTRY.

Since these courses involve laboratory work, the student will be obliged to procure a coupon book at the office of the Secretary, and coupons will be removed from this from time to time to cover the expenses of the course. The apparatus needed will be loaned the

students without expense, but they are required to pay for apparatus actually broken, destroyed, or used up.

I (nearly = 1).—INTRODUCTORY CHEMISTRY. Three hours credit. 10:15 to 12:15 and 3 to 4. The study of chemical elements and their compounds, based on Remsen's *Briefer Course in Chemistry.* This course is especially designed for students who desire to review their work in chemistry and for teachers who wish to take some work in addition to what they have previously had. This course will be regarded as a duplicate of 1. Assistant Professor McFarland and assistant.

II (=4).—QUALITATIVE ANALYSIS. Five hours credit. 7 to 12:15. This course will include lectures and laboratory work, using Bailey and Cady's *Guide to the Study of Qualitative Analysis,* and Ostwald's *Principles of Inorganic Chemistry.* It must be preceded by the course in advanced inorganic chemistry; but pharmacy and medical students who have completed one course in elementary chemistry will be admitted to this course and given credit in those schools. Associate Professor Cady.

III (=12).—ORGANIC CHEMISTRY. Five hours credit. 7 to 12:15. A study of the hydrocarbons and their derivatives. Assisttant Professor McFarland and assistant.

IV (=7).—QUANTITATIVE ANALYSIS. Five hours credit. 7 to 12:15. This course will consist almost exclusively of laboratory work, and must be preceded by the course in qualitative analysis. The work will require at least five hours of laboratory work daily. Assistant Professor McFarland and assistant.

V.—The chemical laboratories offer facilities for research work in analytical, physical and organic chemistry to graduates of this or other institutions who are prepared to do such work. The courses will be accepted for credit in the Graduate School. Students who contemplate work of this character should make arrangements with the chemistry department before coming to the University.

VI (=Pharmacy 1).—PHYSIOLOGICAL AND MEDICAL CHEMISTRY. (*Not given for less than six students.*) Five hours credit. Five hours a day, six days a week. Open to students in the School of Medicine, the School of Pharmacy, and the College. Products of physiological interest are separated from animal tissues and organs and studied in detail. Special attention is given to the study of carbohydrates, proteins, and the normal and abnormal products of animal life. The second part of the course consists of urinalysis, embracing lectures, recitations, and work in both chemical and microscopical laboratories. Mr. Emerson.

## FREE-HAND DRAWING AND DESIGN.

The instruction given in free-hand drawing is individual. The method of instruction aims to teach the student to construct form in a simple and correct manner, with special attention given to methods of instruction for those who desire to teach drawing in the public schools, and methods of making drawings for reproduction for those wishing to use them in their scientific work.

The entrance requirement of free-hand drawing in the School of Engineering can be made up by taking course I.

I (=1).—FREE-HAND DRAWING. Three hours credit. 8 to 12:15. Drawing with pencil and water-colors from the cast and objects of still life. The last half of the term will be devoted to painting landscape with water-colors, working out of doors. Professor Griffith.

II (=3).—PRINCIPLES OF ART. Two hours credit. 7 to 8. A lecture course on the theory of the technical beauties of a work of art, presenting the principles of perspective and composition, together with consideration of technical processes. Library reading is assigned. The object of the course is to give the student a critical knowledge necessary to understand and more fully enjoy a work of art. Professor Griffith.

## ECONOMICS.

I (nearly = 1).—ELEMENTARY ECONOMICS. Two hours credit. 9 to 10. The essentials of an introductory course in this science will be given in a form harmonizing with recent improvements in terminology and in point of approach. This will enable the teacher whose training in the subject was obtained some years ago to review it in the light of recent advance and to become familiar with the newer literature of the subject. Especial efforts will be made to point out the best methods of presentation and to meet the problems confronting the teacher of this subject. For those who have not already studied economics, additional reading and guidance will be provided, to make the course for them about equivalent to the first part of the college course in elements of economics. The course will be regarded as a duplicate of the first part of 1. Assistant Professor Cone.

II (nearly = 2).—ECONOMIC HISTORY OF ENGLAND. Two hours credit. 8 to 9. The main steps in England's development from a purely agricultural country to the most exclusively commercial and manufacturing country in the world will be traced, with the purpose of explaining the cause of this evolution—an evolution, moreover,

that is to a considerable extent met with in other countries as well. Such a complete and radical change in a nation's method of making its living offers for study a great variety of economic facts and many illustrations of relation and interaction between these facts and economic policies and theories. Thus the student gets many cases for illustrating and testing economic principles. To the student of general English history, also, the course will be useful, by furnishing a clear view of one very important line of English development. For the student of American affairs as well this study has value, because it gives the stem from which American economic growth started. The course will be regarded as a duplicate of 2. Assistant Professor Cone.

## EDUCATION.

I (nearly = 2).—History of Modern Education. Three hours credit. 7:30 to 9. It deals with the period from the revival of learning to the present time, especially with the development and significance of pietism, realism, the later humanism, philanthropinism; the work and influence of Pestalozzi and Froebel; the growth of intellectual freedom for women; the common-school revival in America, with the work of Horace Mann and Henry Barnard; the recent development of present-day educational systems and current educational doctrines. Prescribed readings, reports, and lectures. Professor Olin.

II (= 10).—Educational Theory. Two hours credit. 9 to 10. A critical study of Rousseau's *Emile* and Herbert Spencer's *Education;* discussion of the validity of their principles and the correspondence of those principles to current practice. The course will also include a study of the fundamental principles of Herbart. Professor Olin.

## ENGLISH LANGUAGE.

I (nearly = 23).—Methods of Teaching English. Two hours credit. 10:15 to 11:15. Review of principles of teaching English literature, English composition, and English language, by means of lectures, library reading, and illustrative work. Applicants whose preliminary study of English has included only literature and composition are recommended to take with this course the following one also, No. II. The course will be regarded as a duplicate of 23. Professor Hopkins.

II (= 24).—Elementary Old and Middle English. Two hours credit. 11:15 to 12:15. Designed to accompany course I, for

applicants who have not earlier given attention to the study of English language. A brief survey of the earlier forms of English, with reading of representative selections. Professor Hopkins.

## ENGLISH LITERATURE.

I (nearly = 19).—THE ENGLISH NOVEL. Two hours credit. 8 to 9. An historical and critical survey of the English novel, from Defoe to Meredith. Lectures on the technic, theory and development of the novel. Study of selected typical novels. Required library readings, with the preparation of a thesis. This course will be regarded as a duplicate of 19. Associate Professor Whitcomb.

II (nearly = 8).—SHAKSPERE. Two hours credit. 9 to 10. Lectures on the artistic development of Shakspere, the influences shaping his career, and other aspects of Shakspere scholarship. Analysis and interpretation of two plays. Preparation of a thesis. This course will be regarded as a duplicate of 8. Associate Professor Whitcomb.

## ENTOMOLOGY.

It is not the purpose of the department to repeat in the summer the regular winter courses, but rather to offer such work as can be conducted profitably only in the summer months. Accordingly, special attention will be given to the study of the living forms and the work will be conducted in part as an outdoor study.

I (nearly = 7).—LABORATORY AND OUTDOOR COURSE FOR TEACHERS. (*Not given for less than six students.*) Two hours credit. A minimum of ten hours a week, five of which will be 9 to 10; the others by arrangement. This course deals with the life-histories, behavior and activities of some of our more interesting forms of insect life. In the laboratory, the work consists of an anatomical study of type forms, the preparation and proper methods of conducting vivaria and aquaria, the arrangement of cabinets to be used as illustrative material in the public schools. The field excursions have in view the study of restricted areas, the fauna of such, together with environmental conditions, such as forest life, brook life, pond life. The needs of those interested in nature study, and especially those engaged in teaching nature study and insect anatomy and biology, are fully considered. Open to Juniors and Seniors and to teachers of biology. The course will be regarded as a duplicate of 7. Associate Professor Hunter.

II.—FIELD ENTOMOLOGY. (*Not given for less than six students.*) Three hours credit. A minimum of fifteen hours a week, ten of which will be 10:15 to 12:15; the others by arrangement.

This course is of equal rank with courses 1 and 3 of the College, a taxonomic and biologic study of the insect fauna of this region. This course involves much experimental work. Field-studies are for the purpose of amplifying observations made in the laboratory. Excursions to localities where insect life of special interest occurs. The course may be counted as three of the ten hours of Freshman and Sophomore work offered by the department. Associate Professor Hunter.

III.—RESEARCH STUDENTS and students prepared to do advanced work will be afforded the privileges of the laboratories and the library. It will be advisable, however, for such to arrange for this work beforehand, either in person or by correspondence.

## GEOLOGY.

Opportunity is offered students to do work in geology and geography in regular class, and also in connection with the State Geological Survey. The University of Kansas is one of a number of universities named below, which will, under certain conditions, give credit for summer field-work in geology done at either university.

Amherst College.
Beloit College.
University of Chicago.
Colgate University.
Columbia University.
Hamilton College.
Harvard University.
Johns Hopkins University.
University of Kansas.
Massachusetts Inst. of Technology.
McGill University.
University of Michigan.
University of Minnesota.
University of Missouri.
University of North Carolina.
Northwestern University.
Oberlin College.
Ohio Wesleyan University.
University of Rochester.
Syracuse University.
University of Toronto.
Vanderbilt University.
Washington and Lee University.
Wesleyan University.
Western Reserve University.
Williams College.
University of Wisconsin.
Yale University.

I (=12).—SUMMER FIELD-WORK. Five hours credit. A course in field geology for the study of the stratigraphy, geology and economic products of the carbonic formations of eastern Kansas, southwestern Missouri, and northern Indian Territory. Probably no other part of America affords a better or more complete section of the entire carbonic than do Kansas and the Indian Territory, and certainly few equal this area for the production of lead and zinc ores, coal, oil and gas, clays, and suitable materials for the manufacture of Portland cement, all conveniently close together; and also large industrial interests such as zinc smelters, Portland cement factories, brick factories, glass furnaces, etc.

Opportunity will be given for specialization in stratigraphic geology or in the economic geology of the area. As far as possible individual work will be encouraged.

The party will form at Lawrence, June 7. Length of course, six weeks. Field expenses moderate. Professor Haworth.

In addition to above, advanced students, under certain conditions, may be given positions on the State Geological Survey. Credit will be given in the University for such work the same as in I, and tuition charges will be the same. Personal arrangements should be made with Professor Haworth, state geologist, by students desiring such positions.

## GERMAN.

I (=1).—BEGINNING GERMAN. (*Not given for less than six students.*) Five hours credit. Two and one-half hours a day, beginning at 8. The first eighteen lessons of the Otis-Carruth *Grammar*, with composition exercises. Carruth's *Reader*, about fifty pages. Open to all students, whether they have had Latin or not. Assistant Professor Kruse.

I (=3). REVIEW OF GRAMMAR. (*Not given for less than six students.*) Five hours credit. Two and one-half hours a day, beginning at 8. Freytag's *Die Journalisten. Geschichte des 80-jaehrigen Krieges.* Careful translation and critical comment, together with sight-reading. Assistant Professor Kruse.

Of the above courses but one can be given, and whether even one is given will depend on the demand.

II (nearly=20).—TEACHERS' COURSE. Three hours credit. 7:30 to 9. A review of German grammar, for the benefit of those teaching beginning German in Kansas schools. The course will follow the Otis-Carruth *Grammar*, the state text, supplementing the study by comparison with other school grammars, especially Thomas's. Especial attention will be paid to questions of method. Care will be given to pronunciation and to more difficult questions of syntax. Assistant Professor Corbin.

In conjunction with the German composition, this course will be accepted in lieu of the five-hour credit teachers' course of the regular session, fulfilling the requirement in this respect for the teacher's diploma.

III.—GERMAN COMPOSITION. Two hours credit. 10:15 to 11:15. Practical drill in this subject, with much theme work. The composition of Carruth's *Reader* will be reviewed, together with such other work as is suitable for the second or third year in high-school courses. In this course also especial attention will be paid to meth-

ods. This course will be regarded as a partial duplicate of 5. Assistant Professor Corbin.

## GREEK.

I (nearly = 1).—ELEMENTARY GREEK. (*Not given for less than six students.*) Five hours credit. Two and one-half hours daily, beginning at 8. A course in beginning Greek. Associate Professor Sterling.

## AMERICAN HISTORY.

I.—AMERICAN COLONIAL HISTORY. Two hours credit. 10:15 to 11:15. This course will trace the history of America from the age of discovery to the war of independence. The origin and development of the English colonies, the European conditions that affected them and the conditions that produced the revolution will constitute the main subjects of study. Special effort will be made to deal with the practical problems in methods of teaching with which teachers are constantly confronted. Assistant Professor Becker.

II (=3).—CONSTITUTIONAL LAW. Two hours credit. 11:15 to 12:15. This course is offered in the belief that it constitutes the best possible preparation for the teaching of civics in the secondary schools. The fundamental principles of the American system of government and the practical application of these principles historically will constitute the main subject of study. A thorough grasp of constitutional law is essential to the proper handling of descriptive civics, and an effort will be made to meet the needs of teachers who may elect the course. Assistant Professor Becker.

## EUROPEAN HISTORY.

I (nearly = 9).—THE FRENCH REVOLUTION AND NAPOLEONIC ERA. Two hours credit. 8 to 9. The history of Europe from 1789 to 1815. Lectures, recitations, and assigned reading. With additional requirements of reading and reports, this may be counted as a graduate course. This covers the same ground, in a more general way, as course 9 of the General Catalogue, and will be considered a duplicate of it. It will include lectures on the situation and history of France in the years preceding the revolution, and a more detailed study of the life of Napoleon. Professor Abbott.

II.—ENGLISH HISTORY, 400–1895. Two hours credit. 9 to 10. This is intended primarily as a review of the principal events and movements of English history, especially for teachers, but open to others. It covers the same ground as courses 1 and 2 in the Gen-

eral Catalogue, and will be regarded as a duplicate of them, but will be of a more advanced character, consisting principally of lectures, discussions, and library work. Attention will be paid to bibliography, methods and geography in such a way as to make it especially useful to those interested in or teaching English history or English literature. Professor Abbott.

## LATIN.

I (may=11).—TEACHERS' COURSE IN GRAMMAR AND COMPOSITION. Two hours credit, or none. 9 to 10. Probably two days a week will be devoted to lectures and grammar study on the more difficult parts of Latin syntax. The composition exercises of the other days will be adapted to the needs of the class. If sufficiently advanced in character, credit will be given for the course. If teachers wish to review the exercises in one of the preparatory manuals, no credit can be given. If both kinds of work are demanded, the class will meet in two sections on those days. Professor Walker.

II (may nearly=22).—TEACHERS' COURSE IN CÆSAR. Two hours credit, or none. 4 to 5. The work will be adapted to the needs of the class, but it cannot be taken to make up an entrance condition by those who have never read Cæsar. Either a thorough study of the first book will be made, equal attention being given to translation, syntax, and the geographical and military points involved (no credit); or only the geographical and military features of the first four books will be studied. In the latter case the course will be regarded as a duplicate of 22. There is an excellent collection of maps and books on Cæsar in the Latin seminary room, where the work of 22 must be done. Arrangements will be made to satisfy both classes of students, if they should apply for the course. Professor Walker.

## LAW.

The courses in law in the Summer Session are designed to assist those who do not have the requisite credits in law to entitle them to enroll regularly in either the Middle or Senior classes of the School of Law, or who desire to shorten the actual time required to complete the three years' course of study. A course has been arranged which will enable a person who enrolls in the Summer Session of 1906 to graduate after attending two Summer and two regular sessions of the University, provided he has previously completed the preparatory work required for entrance to the Law School, as laid down in the General Catalogue.

The following courses will be given during the Summer Session of 1906:

I.—Criminal Law. A general survey of the substantive law of crimes, both common law and statutory. Professor Green.

II.—Torts. A study of conversion, negligence, duties of landowners, hazardous occupations, deceit, defamation, etc. Text, Bigelow on Torts. Associate Professor Higgins.

III.—Bills and Notes. The formal requirements, interpretation and construction, negotiability, consideration, negotiation, liability of parties, dishonor, discharge, acceptance, checks, notes, and bills of exchange. Text, Norton on Bills and Notes. Professor Green.

IV.—Agency. Who is a competent principal and who is a competent agent, formation of the relation, authority, rights, duties and liabilities of the several parties, principal, agent, and third party, and various classes of agents. Text, Mechem on Agency. Associate Professor Higgins.

Any two of the above may be taken by the student, upon satisfying the instructor of his preparation to undertake the work. It is intended, however, that those who wish to complete the course in the School of Law in two Summer and two regular sessions shall study criminal law and torts in the first Summer Session and agency and bills and notes in the second Summer Session. During the regular sessions the student will pursue the course of study in an order which will be made known to him upon application.

## MATHEMATICS.

I (=2).—College Algebra. Three hours credit. 7:30 to 9 Rapid review of exponents, radicals, and quadratic equations; graphical representation; complex numbers; logarithms; determinants; theory of equations; numerical equations of higher degree. Text-book: Hawkes's *Advanced Algebra*. Assistant Professor Van der Vries.

II (=4).—Analytic Geometry I. Two hours credit. 9 to 10. The straight line and circle; loci problems. Ashton's *Analytic Geometry*. Open to all students who have completed courses 2 (college algebra) and 3 (plane trigonometry). Assistant Professor Van der Vries.

III (=5).—Calculus I. Three hours credit. 7:30 to 9. Differential calculus; fundamental principles; derivatives; applications to geometry and mechanics; maxima and minima; indeterminates;

series. Granville's *Calculus*. Open to students who have completed or are taking course II. Professor Newson.

A TEACHERS' COURSE IN MATHEMATICS.

The last few years have witnessed a remarkable revival in this country and abroad of interest in the teaching of mathematics and in the question of its proper place in the curriculum of the schools. In all sections of the country teachers' associations and other interested people are eagerly discussing questions of mathematical reform in the grammar grades and high school. Special organizations have been formed in many parts of the country to deal with these questions, and a special journal has been founded to furnish a suitable forum for such discussions.

There is already a wide-spread interest in this movement among Kansas teachers, and many of them are desirous of knowing for themselves more of the relative merits and demerits of the present system as well as the character and extent of the proposed changes. To meet the wants of this large body of teachers the following course is offered at the Summer Session:

IV (=18).—TEACHERS' COURSE IN MATHEMATICS. Two hours credit. 10:15 to 11:15. This course is designed for teachers, and students who are preparing to become teachers, of mathematics. It embraces the history, pedagogy and mutual relations of the mathematical subjects usually taught in the public schools from the beginning of the seventh grade to the end of the high-school course. The course consists of (1) history of mathematics, reading, and lectures; (2) a comparative study of the mathematical curricula of the schools of this country and of Europe; (3) a consideration of the best order of taking up the different subjects; and (4) the best methods of teaching the different topics. Open to any one who is a graduate of an accredited high school or has an equivalent preparation. Professor Newson.

## MUSIC.

The department of music will offer courses in piano, under Professor Preyer; in piano and technic, under Miss Greissinger; and in voice, under Mrs. Lyons.

The fees for these courses may be learned from the catalogue of the School of Fine Arts. Students in music do not pay the regular Summer Session fee.

These summer courses offer a valuable opportunity to three classes of music students: To teachers who wish to improve their own playing, add to their repertoire, and increase their knowledge

of teaching methods; to students who wish to complete their preparation for the Fine Arts School, or for some particular year, and especially for those who have entered the February Freshman class and wish to make up the remaining work of the year to enter as Sophomores in September, also to high-school students who are too busy during the school term to give much attention to music; and, finally, to those who study music only as a source of general culture and to gratify personal tastes. The courses in voice are of especial value to teachers and church singers who wish to gain wider experience in forms of service. It is often possible for a good singer to procure a temporary position in one of the city churches. In the University library a large collection of books on music is available, and courses of reading on any musical topic may be followed out.

## PHILOSOPHY AND PSYCHOLOGY.

I (nearly=1). PSYCHOLOGY. Two hours credit. 10:15 to 11:15. This will be a course covering the general field of mental phenomena, although designed more for the teacher than for the college student. Applicants for the course should have some elementary knowledge of the subject, at least equivalent to that represented by the examination for a teacher's certificate. Lectures and assigned library work. The course will be regarded as a duplicate of 1. Professor Templin.

II (=2).—INTRODUCTION TO PHILOSOPHY. Two hours credit. 11:15 to 12:15. A general survey of the methods, aims and results of the various natural sciences, their relation to each other, and their ultimate significance. While the course thus deals primarily with the natural sciences it serves as an elementary introduction to philosophy. This course is identical with the course open to Sophomores during the regular session. It should be preceded by elementary science courses. Lectures and assigned library work. Professor Templin.

## PHYSICAL EDUCATION.

I (nearly=6).—TEACHERS' COURSE. (*Not given for less than six students.*) Two hours credit. 11:15 to 12:15. Designed for those who wish to conduct classes in schools or colleges. Drills in the different forms of calisthenics and light apparatus will be studied, and opportunity will be given for practice in teaching. Hygienic exercises on the heavy apparatus will be given to suit the individual cases. Preparation of classes for exhibitions or class-

day exercises. This course will be regarded as a duplicate of 6. Associate Professor Naismith.

II (nearly = 8).—GAMES FOR SCHOOL CHILDREN. (*Not given for less than six students.*) Two hours credit. 2 to 3. This course is designed to give the teacher a knowledge of the games suitable for the school yard. This will include a study of the game, its purpose, its effects, its rules, methods of teaching, and its danger. This course will be regarded as a duplicate of 8. Associate Professor Naismith.

The gymnasium will be open at all times, when there is not a class in session, for the use of those who wish to use it for recreative purposes or for individual development. Physical examinations will be given and exercises prescribed for those who need special corrective work. The athletic fields will be used for such games as baseball, lacrosse, golf, tennis, and hockey. Indoor games such as hand-ball, volley-ball and basket-ball will be played in the gymnasium at stated hours.

## PHYSICS.

I (nearly = 3 and 4).—GENERAL COURSE IN PHYSICS. Two hours credit. 8 to 9. The course consists of lectures and experimental demonstrations covering the more fundamental conceptions of physics. Prerequisite: Some knowledge of plane trigonometry and a year's course in high-school physics. For duplication, see note below. Assistant Professor M. E. Rice.

II (nearly = 5 and 6).—LABORATORY COURSE IN GENERAL PHYSICS. Three hours credit. Fifteen hours a week, five of which will be 9 to 10; the others by arrangement. The course includes demonstration experiments as well as quantitative measurements. Prerequisites: This course can be taken only by those who are taking course I, or by those who have had plane trigonometry and have taught the work in high-school physics. For duplication, see note below. Assistant Professor M. E. Rice.

III. Work in advanced courses may be arranged for in special cases, but can be counted upon *only after* personal consultation with the instructor.

Courses I and II are intended primarily for high-school teachers. They are briefer than the corresponding regular courses 3 and 4, and 5 and 6, respectively. Students who have taken course I can do the work of courses 3 and 4 more easily, and thus complete a credit of five hours. Students who have taken course II can do the remaining work of courses 5 and 6, and thus complete a five-hour credit.

## PUBLIC SPEAKING AND DEBATE.

I (nearly = 1).—PUBLIC SPEAKING IN THE HIGH SCHOOL. (*Not given for less than six students.*) Two hours credit. 8 to 9. This course conforms in general outline to public speaking 1, a beginning course for Freshmen and Sophomores, and will be regarded as a duplicate of that course. This course will be offered both as a practical and a theoretical training in the principles of public speaking, in which emphasis will be given to the actual teaching of the subject in the high schools. Associate Professor Frazier.

II (nearly = 6).—READING ALOUD. (*Not given for less than six students.*) Two hours credit. 9 to 10. A course designed as an aid to the teacher of reading in primary and secondary schools. A brief review of past elocutionary methods for the purpose of comparison with the more modern system of teaching. Methods for creating an interest in reading and suggestions for training the pupil to read intelligently and with feeling. This course will be regarded as a duplicate of 6. Associate Professor Frazier.

## ROMANCE LANGUAGES.

I (=1).—ELEMENTARY FRENCH. Five hours credit. Two and one-half hours daily, beginning at 8. A course for beginners, including the essentials of the grammar and easy reading, with careful drill in pronunciation. Oral and written exercises. Text-book, Fraser and Squair's *French Grammar*. Professor Galloo.

Of the following courses but one can be given, and whether even one is given will depend on the demand:

II (=2).—ELEMENTARY FRENCH II. (*Not given for less than six students.*) Five hours credit. Two and one-half hours daily, beginning at 9. This course is a continuation of course 1. It carries on the study of grammar, with easy composition and dictation, and some practice in speaking. An attempt is made to gain a good vocabulary by extensive reading of simple prose, such as Daudet's *Selected Stories*, Pouvillon's *Petites Ames*, and Sandeau's *Mademoiselle de la Seigliere*. Assistant Professor Bassett.

II (=1). ELEMENTARY SPANISH. (*Not given for less than six students.*) Five hours credit. Two and one-half hours daily, beginning at 9. A course for beginners, in which the object is to obtain, at an early date, a practical reading knowledge of modern Spanish. Emphasis is laid on acquisition of the leading grammatical facts of the language, and a good pronunciation is carefully cultivated. The text-books are: Ramsey's *Spanish Grammar*, Fontaine's *Doce Cuentos escogidos*, Matzke's *Spanish Reader*. Assistant Professor Bassett.

Teachers or others who, either for review or for a study of methods, desire to take any of the work outlined above, will be assigned conference hours for discussion of special points.

## SHOP WORK.

The shops will be open from 7 to 12 six days in the week, and 1 to 6 five days in the week, from June 7 to June 29. The total number of hours required in each course is seventy-eight. It will, therefore, be possible for a student to make up either one or two courses in the three weeks. *Courses 3 to 6 will not be given unless the total number of students in these courses reaches at least six.*

1.—Forging, welding and working iron at proper heat. Making steel tools, and tempering. Mr. Hanson.

2.—Use of hand wood tools; sharpening; the lathe and pattern-turning; pattern-making, core-boxes, draft, shrinkage, finish, etc.; selection of woods; exercises and working from special designs. Special work in manual training can be substituted for a part of this work by those who are not engineering students. Mr. Jones.

3.—Filing, chipping, scraping, drilling, babbitting, and thread-cutting. Mr. Ward.

4.—Lathe work. Turning cylinders, tapers, curves, and cutting threads. Mr. Ward.

5.—Lathe work. Turning to close fit; eccentric and special thread-cutting. Mr. Ward.

6.—Lathe, planer and milling-machine work. Boring, reaming and shaping to special design. Tool-making, hardening, and grinding. Mr. Ward.

## ZOOLOGY.

I (=1).—Elementary Zoology. Three hours credit. Fifteen hours a week, five of which will be 9 to 10; the others by arrangement. A course in the general principles of zoology, consisting of the laboratory study of type specimens; lectures and recitations upon classification, habits, distribution, etc., and field-work. Associate Professor McClung.

II (=2).—Elementary Zoology. Two hours credit. Ten hours a week, five of which will be 9 to 10; the others by arrangement. A course similar to I, but dealing with the lower invertebrates principally. It may be combined with course I to secure a five-hour credit. Associate Professor McClung.

III (=8).—Cytology, or Cellular Biology. Five hours credit. 7 to 12:15. A course in cell development and inheritance.

There will be taught microscopical methods, the general principles of cell structure, and the relation between germ-cell phenomena and theories of heredity. Open to students with a preparation in general zoölogy equivalent to twenty hours' work. Undergraduate or graduate credit. Associate Professor McClung.

IV.—Opportunities will be offered graduate students to carry on advanced work in lines for which they are prepared and for which the department is equipped; but specific courses cannot be counted on except after correspondence.

# PART IV.

## Institutions Connected with the University and under its Control.

# IX. The Libraries.

The libraries of the University contain 51,200 volumes and 34,000 pamphlets. These numbers are increasing as rapidly as funds will permit. An annual appropriation of $8000 is devoted to the purchase of books, and about 4000 books and 2000 pamphlets will be added during the year 1905-'06. The books are selected with the greatest care, and the endeavor is made to furnish the students the latest and best authorities in the various departments. The library is sufficiently large to enable the student to prosecute research and to furnish him substantial aid in his investigations. Source material in American and European history and in other subjects is being constantly collected, and affords in some lines all necessary material for advanced original work.

**The University Library.** The University library is in the Spooner Library Building, and is open every day in the year excepting Sundays and holidays. Library hours are from eight A. M. to six P. M.; Saturdays, from eight A. M. to twelve M. The reading-room is open from seven P. M. to ten P. M. when the University is in session. Liberal facilities for using the library are offered to all members of the University. All books, except reference books and books too rare to be easily replaced, may be taken from the library by the students for three weeks. However, if a book is needed for a special purpose or a class reservation, it may be recalled by the Librarian, and must be returned at once after notice is received.

BOOK-STACKS. There are five stories in the stack-room of the library, each eight feet high, making all the books within easy reach. The stacks and the flooring of these rooms are of steel, thereby making a perfectly fire-proof depository for the books. Books are classified and arranged on the shelves in the stack-room by the Dewey system of classification.

CATALOGUE. The catalogue of the library contains about 60,000 cards. It is arranged alphabetically both as to author and subject, and the author and subject cards are catalogued together. The cards are arranged in cases in the general reading-room, making them entirely accessible to both instructors and students.

THE GENERAL READING-ROOM. The general reading-room is a

large, comfortable, well-equipped and unusually well-lighted room, on the main floor of the Spooner Library. It is furnished with 200 electric lamps. In this room are about 1000 volumes of general reference books, cyclopedias, dictionaries, and Poole's Index to Periodical Literature, and other books which are of special value to students for reference purposes.

DEPARTMENTAL READING-ROOMS. The departments of German, philosophy, Latin, English and mathematics have reading-rooms on the lower floor of the Library, and the departments of American and European history, sociology and economics have the whole of the upper floor of the building.

PERIODICAL ROOM. The University provides in this room 624 periodicals and learned-society publications and 158 state newspapers, all of which are at the service of instructors and students. The list of periodicals is very large, and includes almost all of the important publications of America and Europe.

OFFICES, ETC. Offices for the Librarian and cataloguer and the accession-room adjoin the general reading-room, and on the lower floor are storerooms, etc.

DEPARTMENT LIBRARIES. Besides the books in Spooner Library building, there are eleven departmental libraries in the different buildings of the University. They are placed in close conjunction with the various laboratories and lecture-rooms, so as to be immediately accessible to students engaged in scientific work.

THE LAW LIBRARY. The law library is located in Green Hall. It contains upwards of 3000 volumes.

**The Lawrence Public Library.** The public library of Lawrence is accessible to students. A new Carnegie building has been erected and is now occupied. This library now contains about 6000 volumes, mainly of general literature and fiction, and, therefore, supplements the University library in that direction.

# X. The Gymnasium.

A Gymnasium and Auditorium Building, to cost $100,000, is now in course of erection. The arrangement and equipment will be modern in every particular. When completed, this building will be the finest gymnasium in the West.

Until the new gymnasium is ready for occupancy, the physical-training classes will be held in the old gymnasium. This is located in Snow Hall, occupying all the basement floor. The main exercise-room is 86 x 36 x 14 feet, and has been refitted so that it is now a pleasant room, well lighted and heated. It may be divided into two rooms by large folding doors, permitting two classes to work at the same time. Another room is set aside for small classes, or for special work by those who are unable to take the regular work, or who need special developing exercises.

The gymnasium is designed to benefit all students of the University, not only by giving an opportunity for general exercise and healthy recreation, but also by providing means of caring for the body, correcting faulty attitudes and functions, developing skill, physical judgment, and self-control. It provides, therefore, for specific training in view of any physical defects that may be remedied by proper care.

The department is under the supervision of a director who is himself a trained physician. He gives courses in physical education in the College designed especially for those who intend to teach.

**Examinations.** A thorough physical examination and measurement is offered each student and a record of results is kept as a basis for advice for exercise. The results are platted on charts, so that the student may compare himself with others and note the progress he is making. Those taking work in the gymnasium or on the athletic field must pass a satisfactory examination on entering the sport. At any time that the health of the student demands it, he is debarred from taking part in any form of exercise that may injure him.

The director's office is equipped with apparatus for taking measurements and for making tests of health, skill, and strength.

The gymnasium is open from eight A. M. to six P. M. each day excepting Sundays.

**McCook Field.** McCook Field, the gift of Col. John J. McCook, is situated only a short distance from the University and gives opportunity for all forms of outdoor athletics and sports. It contains a baseball diamond, a football field, a running-track, and facilities for field athletics. A grand stand and bleachers accommodate the spectators.

## XI. The Museums.

The museums of the University are extensive and valuable. The collections were begun thirty-six years ago by Dr. Francis H. Snow, and have been obtained chiefly during the past thirty years by University exploring parties in western Kansas, Colorado, Wyoming, Arizona, New Mexico, Texas, Oregon, British America, Alaska, Greenland, and South America. The expeditions have been mainly under the direction of Dr. Francis H. Snow, Dr. Samuel W. Williston, Dr. C. E. McClung, and Prof. Lewis L. Dyche. By means of the material thus accumulated, a system of exchange has been established with leading institutions and naturalists in all parts of the United States, so that the cabinets contain a very satisfactory representation of the plants, insects, mammals, birds, minerals, and fossils, not only of the state of Kansas, but also the whole of North America. The collections are nearly all housed in the Museum of Natural History, completed in 1903, at a cost of $75,000.

Several expeditions were sent out in the summer of 1905. Dr. F. H. Snow conducted two parties for the collection of insects for the museum of entomology, one to Cochise county, Arizona, and one to Brownsville, Tex. Many new species were taken.

During the summer of 1905 the zoölogy department conducted an exploration of the John Day region of central Oregon for the purpose of obtaining vertebrate fossils peculiar to this Miocene area. The party, under the direction of Doctor McClung, consisted of Messrs. H. T. Martin, W. J. Baumgartner, and Roy Hoskins. The result of the expedition was to add materially to the mammalian fossils now in the collections. A representative series of Eocene leaves was also secured.

In the summer of 1904 Doctor McClung, with a party of five, made extensive additions to the Cretaceous vertebrate material in the museum by collections from western Kansas.

**Entomology.** The entomological collection is the largest connected with any educational institution in the United States. It contains more than 20,000 species and 200,000 specimens, representing all the different orders of insects. Nearly the whole of this material has been obtained by the expeditions conducted by

the head of the department of systematic entomology during the summer vacations of the past thirty years, supplemented by a system of exchanges with collectors and museums in all parts of the world. The orders of Lepidoptera, Coleoptera and Diptera are especially well represented. Among the Lepidoptera, there are nearly 100 "types" of species described by Grote and Henry Edwards; among the Diptera, there are nearly 600 "types" of species described by Williston, Townsend, W. A. Snow, Aldrich, Adams, Day, Whitney, and Brown; and among the Hymenoptera, 300 "types" described by Viereck.

The cabinet of Coleoptera contains 8000 North American species and 2000 European and exotic forms, and the Lepidoptera and Diptera include 3000 species of each order.

The instruction in this department has special reference to the discrimination of the beneficial from the injurious species, and the extensive collections are of practical value to the agricultural and horticultural interests of the state as well as to the students of the University in the determination of the names and habits of our insect friends and foes.

There is no other university in the country where the advanced student of systematic entomology can find ready access to such an abundance of material for the prosecution of his researches. The collection occupies part of the second and third floors of the Museum of Natural History.

**Zoology.** The collection of large mammals indigenous to the North American continent is one of the most complete in the world. The specimens include the more common and well-known animals of the United States, an excellent representation of the animals of the Atlantic coast as far north as Cape Sabine and from the continent of Greenland. Also a series from the Pacific coast as far north as the Aleutian islands and from the interior of Alaska. This large collection is on exhibition on the second floor of the Museum of Natural History, by Prof. L. L. Dyche and his assistants. The collection will occupy the entire floor, which will be known as "Mammal Hall." New material is constantly being added, and mounted for study and exhibition.

Many thousands of specimens in the shape of skins, skeletons, and skulls, packed away for years in drawers and cases for the want of space for proper exhibition, are now on exhibition in the Museum of Natural History. These are available for students in zoölogy and comparative anatomy, and are used by instructors to illustrate their various lectures.

In the ornithological collections there are between 3000 and 4000

specimens, most of which are carefully protected in moth-proof cases. Many of these are unmounted skins, furnishing ample material for laboratory study when fresh specimens cannot be readily obtained. There is also a fine series of skeletons, representing species in size from the shrews and bats to elephants and whales. These specimens are of great value to students in osteology and paleontology.

An alcholic collection of marine radiates, mollusks and articulates from the Atlantic and Pacific coasts affords to the zoölogical students the means of investigating the anatomical structure of the leading forms in all the great types of the animal kingdom.

In the conchological cabinet are included nearly 1000 species of shells, from all parts of the world.

Recently extensive additions to the invertebrate collections have been made by expeditions to Bermuda and to the northern Atlantic coast. While specimens from all the branches were collected, special attention was directed toward the Porifera, Cœlenterata, and Echinodermata. The teaching museum is now well supplied with representative specimens of all the invertebrate orders.

**Paleontology.** The collections in paleontology offer the best facilities not only for instruction in general stratigraphic geology, but also for special advanced work in systematic paleontology. The collections of invertebrates include about 2000 species, distributed among about 500 genera. They represent all of the principal geological formations, but are especially rich in Kansas forms. The numbers of genera and species from the chief geologic groups are nearly as follows:

Tertiary, 80 genera, 200 species.
Cretaceous, 80 genera, 200 species.
Jurassic, 10 genera, 30 species.
Triassic, 25 genera, 75 species.
Permo-carboniferous, 60 genera, 750 species.
Devonian, 80 genera, 300 species.
Silurian, 75 genera, 250 species.
Ordovician, 90 genera, 250 species.
Cambrian, 20 genera, 30 species.

The collection of fossil vertebrates, with but a few exceptions, is the most extensive in America, and in the Cretaceous forms is unequaled elsewhere. From the Miocene Tertiary of Kansas, Wyoming and South Dakota nearly all the known genera are represented. The Cretaceous animals are represented by many hundreds of specimens, including not a few of exceptional perfection and completeness. The mosasaurs include five genera and twelve or

fifteen species, showing in most of them the complete anatomy. Of fossil birds, the best specimens known are in the museum, and some of the specimens of pterodactyls and plesiosaurs are unequaled in any other collection. Nearly all genera of the Cretaceous fishes are represented, and, in some cases, by exceptional specimens. A creditable series of turtles, including a number of type specimens, is contained in the collection. From the Laramie Cretaceous, the most notable specimen is a mounted skull of the gigantic dinosaur, *Triceratops*. From the Permian and Carboniferous there are also a number of valuable specimens. All together, about 400 species of extinct vertebrates are represented in the museum.

Valuable additions are constantly being made to the collections, both of invertebrates and vertebrates, chiefly by field expeditions. Perhaps the most important of these is a new species of plesiosaur, which has been thoroughly restored and mounted as an entire skeleton. It is without doubt the finest specimen extant. All the collections have been gone over and a card catalogue prepared, so that reference to the specimens is much easier. The collection occupies the most of the upper floor of the Museum of Natural History.

**Paleobotany.** The collection in paleobotany is especially rich and valuable, representing thousands of specimens. The Dakota and Comanche Cretaceous series are the most extensive, and include many types of species and undescribed forms. In addition to the collection of Tertiary plants, there is a very large and valuable series of Carboniferous plants from Kansas, including many new forms yet unknown to science. The collection is placed with that of paleontology. The purchase of a number of cases has made it possible to put on exhibition many more specimens than have before been open for public inspection.

**The Herbarium.** The herbarium includes about 7500 specimens, identified and labeled, of flowering plants, besides much material partly identified. The flora of the western Rocky Mountains is especially well represented. There is also a considerable amount of cryptogamic material, including sets of economic fungi of North America and of North American lichens. The herbarium is housed in Snow Hall.

**Geological Collections.** The museum of economic geology and physical geology contains many hundred specimens. In economic geology there is a large collection of ores of various kinds, especially chosen to represent, first, the character of the ores, and second, the mode of ore formations. Specimens of almost all kinds of ores and other economic products, such as gypsum, coal, oil, etc., are included and arranged in accordance with the two ideas: first, of eco-

nomic value, and second, of origin or formation. Specially to be mentioned in this connection is a very complete collection of lead and zinc ores and associated minerals from the Galena-Joplin district, which is the greatest field for mining zinc ore known in the world.

The petrographic collection contains about 2000 specimens of crystalline rocks from all parts of the world, including the largest collection ever made of granites, porphyrites and basic dike rocks, from the area of crystalline rocks in Missouri. There is also a large and specially selected collection of crystalline rocks from New Hampshire, and another collection from the Lake Superior region.

The mineralogical collection is divided into two groups: first, a working collection for students in the mineralogical laboratory, and second, an exhibitive collection for the museum. The former contains fair specimens and material for use in the laboratory, but representing all the leading classes of minerals, while the latter contains more pretentious and showy specimens, more generally interesting to the public.

**The Classical Museum.** The classical museum contains full-sized plaster casts of the Hermes of Praxiteles, the Venus of Melos, the so-called Theseus of the Parthenon, three Metopes and fifty-five feet of the frieze of the Parthenon, the Lenormant statuette of Athena Parthenos, the Opheus relief, the Satyr and Mænad relief, the Borghese Warrior, Augustus in military dress, the so-called Germanicus, eighteen busts of Greek sculpture, and Greek and Roman authors and emperors, two Tanagra figurines, and the Nike of Paionois inscriptions.

Models of the Acropolis of Athens, the east pediment of the Zeus temple at Olympia, the Victory of Paionois, and the Vatican Amazon.

Relief maps of Athens and Rome.

Laloux's restorations of Olympia, Defrasse's restorations of Epidaurus, Pontremoli's restoration of the Pergamon, and Weichardt's restoration of Pompeii.

Stuart and Revett's Antiquities of Athens, 363 plates; Penrose's Athenian Architecture, 47 plates; Inwood's Erechtheum, 39 plates; Bohn's Propylæa, 21 plates; Ross, Schaubert and Hansen's Athena Nike Temple, 13 plates; Michaelis's Parthenon, 15 plates; Cockerell's Temples of Ægina and Bassæ, 37 plates; Koldewey and Puchstein's Temples of Lower Italy and Sicily, 29 plates; Major's Temples of Pæstum, 25 plates; Adler's Mausoleum, 5 plates; Le Roy's Ruins of the most beautiful monuments of Greece, 60 plates; Fenger's eight colored plates of Doric architecture; the plates of the final reports of the excavations at Assos and Delphi, as far as they have

yet been published; Piranesi's large engravings of the columns of Trajan and Marcus Aurelius; twelve photographs of architectural models in the Metropolitan Museum, New York.

A complete set (560 so far) of Brunn's plates of Greek and Roman sculpture; 55 Braun photographs of the Elgin marbles; 139 plates of the Sabouroff collection of sculpture, terra-cottas, vases, and bronzes; Furtwaengler's ancient gems, 67 plates; 82 plates of the silver vases and utensils found at Hildesheim and Boscoreale; 6 colored plates of Odyssey paintings found in Rome, Dodwell's; 30 views of Greece, in color; Lau's and Genick's 84 colored plates of Greek vases; 27 colored plates of Greek vases in the British Museum; Furtwaengler and Loeschke's Mycenæan vases, 49 plates; Harrison and MacColl's Greek vases, 43 plates; Furtwaengler and Reichhold's large plates of Greek vases, as far as they have been published, 50; 11 colored plates of Greek and Etruscan terra-cotta sarcophagi in the British Museum; Preller's four cartoons of wall-paintings of ancient Greek landscapes in the Albertinum, at Dresden; 39 plates of Monumenti Inediti and Antike Denmæler vases, sculpture, and architecture; 650 photographs illustrating Roman topography and life.

A *facsimile* of the whole of the Bacchylides manuscript; 36 plates of other Greek manuscripts; 25 *facsimiles* of Biblical manuscripts in the British Museum; 30 *facsimiles* of the Flinders Petrie Egyptian Greek papyri; 62 plates of Latin manuscripts; Roehl's collection of oldest Greek inscriptions, many of them in *facsimile.*

Baumeister's monuments of classical antiquity, 95 plates and 2400 illustrations; 1800 stereopticon slides of Greek and Roman views, portraits, buildings, statues, paintings, vases, and manuscripts.

The classical museum is located in Fraser Hall, south wing, second floor.

# XII. The University Geological Survey of Kansas.

As explained below, the Geological Survey is work undertaken for the good of the state without compensation to members of the Faculty. It is state work, and should be done by a state institution, and without cost to the state other than necessary expenses. The department of geology and mining, through its head, who is also superintendent of the Survey and state geologist, works through and in conjunction with the Survey to develop as large as possible the mineral resources of the state. The results already have been of very great value to the state, especially in the development of coal, oil, gas, Portland cement, gypsum and its products, clay manufactures, etc.

The University Geological Survey of Kansas was organized by the Board of Regents of the University in 1894, under authority conferred by legislative act, and is supported by direct legislative appropriations. The object of the organization is to accomplish a geological survey of the state as rapidly as possible—a survey giving a complete exposition of the geological and mineralogical resources of the state, including all subjects of economic and scientific importance.

It is contemplated that the work will be done by members of the University Faculty and advanced students, so that the cost to the state will be a minimum. The Faculty of the College recognizes such student work by giving credit for it, the same as for work done in the classrooms and laboratories of the University.

Work was first begun on the Survey in the summer of 1893, and has been carried forward steadily ever since. During that summer the department of physical geology had three assistants doing field-work; in 1894, four; in 1895, twelve; in 1896, twelve; in 1897, seven; in 1898, five; in 1899, five; in 1900, four; in 1901, five; and in 1902, five. The subjects thus far investigated are: The general stratigraphy of the entire state; the coal-fields; salt; gypsum—on all of which special reports have been published. In addition, much work has been done in the investigation of the lead and zinc ore deposits of the state, and a report on the same is nearing completion. A

large amount of work has also been done in investigating the oil and gas territory in the southeastern part of the state, but at least one more summer must be devoted to field-work along this line before a report can be prepared.

The department of paleontology of the University has likewise done a large amount of work investigating the fossil fauna and flora of the state, and has published two reports on the subject.

The department of chemistry has made an investigation of the mineral waters of the state, and has published a report on the subject.

The Survey has already published the following reports, all of which are for free distribution, the recipient paying transportation charges. (Those marked with a star are out of print.)

Volume I, 1896—Reconnaissance Report on General Stratigraphy of Eastern Kansas.*
Volume II, 1897—General Geology of Western Kansas.*
Volume III, 1898—Special Report on Coal..... 28 cents.
Volume IV, 1898—On Upper Cretaceous Paleontology.*
Volume V, 1899—Special Report on Gypsum and Gypsum Cement Plasters..... 16 cents.
Volume VI, 1900—Carboniferous Invertebrates and Cretacous Fishes..... 28 "
Volume VII, 1902—Mineral Waters..... 20 "
Report on Mineral Resources of Kansas for 1897..... 4 "
Report on Mineral Resources of Kansas for 1898.*
Report on Mineral Resources of Kansas for 1899..... 4 "
Report on Mineral Resources of Kansas for 1900 and 1901, 5 "
Report on Mineral Resources of Kansas for 1902..... 7 "
Report on Mineral Resources of Kansas for 1903..... 3 "

Volume I is devoted entirely to reconnaissance work in stratigraphy and a preliminary description of the general geology of eastern Kansas, with a short description of the oil- and gas-fields of the state and a preliminary catalogue of invertebrate fossils found in the Carboniferous age.

Volume II is a similar description of the stratigraphy and other features of general geology of western Kansas, being a companion to volume I. It has a short chapter on some phases of vertebrate paleontology.

Volume III is a special report on coal, giving a general account of the stratigraphy of eastern Kansas, the most extensive yet published, and a detailed account of the coal-bearing strata of the state, methods of mining, the chemical and physical properties of Kansas coal, and other points of a like nature.

Volume IV is devoted entirely to the paleontology of the Upper Cretaceous. It is profusely illustrated with plates and cuts of vertebrate fossils from western Kansas.

Volume V is a special report on gypsum and gypsum cement plasters, giving the results of about three years' investigation. This is probably the best account yet published on this interesting product.

Volume VI is the second volume on paleontology, and is occupied jointly by Carboniferous invertebrates and Cretaceous fishes.

Volume VII is devoted entirely to the mineral waters of the state, and gives a description not only of the mineral waters of Kansas, but of mineral waters in general,

The series of annual reports began with a report on the mineral productions of the state for 1897, and has been issued annually ever since, excepting one year. The reports for 1900 and 1901, were issued jointly. Largely they are repetitions of the same subjects, as each one of them contains a complete summary of the total state production to date. They cover the subjects of gold, silver, lead and zinc, coal, oil, gas, clay products, gypsum, hydraulic and Portland cements, building stone, and salt.

The report for the year 1902 was delayed in publication and thereby admitted a short report on the extraordinary flood of the Kansas river in May and June, 1903. The report for 1898 contains an extended description of Kansas salt as a special article, and similarly the report for 1902 has a specially prepared chapter on Portland cement.

# PART V.

## Degrees Conferred and Lists of Students.

# Degrees Conferred.

## June, 1905.

### Master of Arts.

Herman C. Allen.
Ralph Waldo Bahner.
Geneva M. Bamford.
Edward R. Barrett.
Mary Patterson Clarke.
Claude E. Deming.
Frank Edenburg.
Isabelle Hazen.
I. Victor Iles.
Charles H. Landrum.
Cora Mathes.
Ray Merwin.
Rose Ruth Morgan.
Frances E. Norris.
Charles Harker Rhodes.
Helen Stafford.
Bennett M. Stigall.

### Master of Science.

Earle Nelson.
James A. G. Shirk.

### Bachelor of Arts.

James Homer Adams.
Hendry James Alford.
Carrie Olena Anderson.
Charles O. Anderson.
Austin C. Andrews.
Lois Ardery.
Mabel Ashley.
Lilian Axtell.
William H. Bailey.
Myrtle Baldridge.
Mabel Barber.
Ada Barnett.
Samuel E. Bartlett.
Albert Beach.
Otto Behimer.
Bonnie Bell.
Bessie Bowden.
Clara Bowen.
Clarence R. Briggs.
Montrose Burrows.
Constance Carruth.
Lucile Hayes.
Grace Hayward.
B. Edna Henrichs.
Lesley Hill.
Eva Hirst.
Daisy Hoar.
Ethel Hoar.
Nadine Hosford.
Roy Graham Hoskins.
Vera Hull.
Charles Daniel Ise.
I. Victor Iles.
Clark E. Jacoby.
Helen Johnson.
Anna Joseph.
Pearl Kimble.
Laura E. Kreamer.
Alma M. Leidigh.
Charles H. Landrum.
Edith Levan.
Ethel F. Lindner.

**Bachelor of Arts**—*Concluded.*

Mary Cecilia Copley.
Maude Cramer.
Irene Crawford.
Roy Cross.
Nellie King Cureton.
Frankie Curl.
Roger Dean.
Claude Deming.
Gertrude Dillon.
Albert Draper.
Daisy Dean Dryden.
Fannie Duerson.
Fred W. Faragher.
Jennie G. Fones.
Esther J. Gabrielson.
Lulu Gardner.
Dana E. Gatlin.
Robert Ernest Gentry.
Charles M. Gibson.
Irene Gilchrist.
William B. Gladfelter.
Clarence B. Goddard.
Agnes E. Graham.
Zilora Maggie Gurnea.
Metta Kouns Haines.
Winnifred Hammond.
Kate Ingeborg Hansen.
Frank A. Hartman.
Edith McCarty.
Lena Vivian Miller.
Roy Lee Moodie.
Eleanor E. Morse.
Mildred Newman.
Ella M. Nye.
Eva Olin.
Emma Palmer.
John W. Pattison.
Jessie A. Reynolds.
Vivian C. Roberts.
Alice Rose.
Marion Fore Russell.
Kate L. Sellards.
Myrtle Sellards.
Ray Sexton.
Margaret H. Street.
Margaret Thompson.
Lalia Viola Walling.
Lulu Walton.
Carrie Warren.
Edetha Washburn.
Sarah Abigail Wilder.
John Taylor Williams.
May Williams.
Florence E. Winship.
Edith Wirt.
John Woodin.

**Bachelor of Arts in Law.**

Charles Wierenga.

**Bachelor of Science.**

Alfred B. Carter.
Chester Cooke.
Roy S. Filkin.
Blake Hull.
Oscar Kuchs.
Thomas E. Linton.
Giles Maxwell.
Richard Mieth.
Charles E. Morrow.
Earle Nelson.
Joseph O'Neil.
Howard F. Pigg.
Roland E. Porter.
William A. Quiring.
Eric Schoenau.
Noble P. Sherwood.
Alexander R. Stroup.
Antonio Tommasini.
Alexander R. Young.

**Bachelor of Music.**

Margaret Hammond.
J. I. Gregg McElhinny.
Grace Lorene Moses.
Mary Keeling Parks.
Elsie Belle Watson.

**Bachelor of Laws.**

Carl Ackarman.
Henry H. Asher.
Burdette Blue.
James A. Brady.
Rutherford Butts.
George S. Carter.
Oliver Q. Claflin.
Thomas H. Cureton.
Abijah Fairchild.
Charles Fulton.
Malcolm Garrard.
Fred A. Gillette.
Roy J. Givens.
Albert Hicks.
Clyde S. Higley.
Judson Hughes.
John A. Johnson.
Frank A. McCoy.
John J. McCurdy.
Charles E. McGinnis.
Manley E. Michaelson.
Harvey F. Miller.
David H. Morgan.
Robert B. Patrick.
Guy E. Pees.
Harry N. Sanders.
Richard H. Thompson.
Grover C. Urbansky.
Henry Van Natta.
James W. Woodford.

**Pharmaceutical Chemist.**

Lindsey Kelly Adams.
Erwin B. Bernet.
Rodney Chatelle.
Clyde A. Funchess.
Omar Goyette.
Harry Lahr.
Dale Miller.
Roy L. Sanford.
Wiltz B. Trible.
Claude W. West.

**Certificate in Medicine.**

Clarence B. Francisco.
John Gephart.
Charles M. Gibson.
Marion F. Russell.
Frank Sorgatz.
Herbert Tuthill.
John Woodin.

**Teacher's Certificate in Music.**

Mary Keeling Parks.
Alma Pearl Smith.

**Certificate in Elocution.**

Minnie Luetta Owens.

**Teacher's Diploma.**

Carrie O. Anderson.
Maude M. Cramer.
Frankie E. Curl.
Gertrude Dillon.
Fannie E. Duerson.
William B. Gladfelter.
Lucile Hayes.
Grace A. Hayward.
Daisy L. Hoar.
Laura E. Kreamer.
Martha A. Leidigh.
Mildred Newman.
Eva Olin.
Kate L. Sellards.
Mary E. Washburn.
Gertrude Hunnicutt.
Mary Copley.
Edith Wirt.
Alice Rose.
Lois Ardery.
Irene Crawford.
Claude E. Deming.
Daisy D. Dryden.
Jennie G. Fones.
Zilora Gurnea.
Edna Henrichs.
Lesley Hill.
Nadine Hosford.
Charles H. Landrum.
Eleanor E. Morse.
Ella M. Nye.
Vivian C. Roberts.
Lulu Walton.
May E. Williams.
Bessie Miller.
Carrie Warren.
Emma Palmer.

# Roll of Students.

## The Graduate School.

° Non-resident students.

* Seniors, the College, who have completed sufficient work for the A. B. degree and are doing graduate work.

Allen, Herman C., A. M. '05, University of Kansas, *Chemistry*, . . . . McPherson.

Adams, James Homer, A. B. '05, University of Kansas, *German, English*, . . Beloit.

Anderson, Charles Otho, A. B. '05, University of Kansas, *Entomology*, . . Coffeyville.

Bahner, Ralph Waldo, A. M. '05, University of Kansas, *German*, . . . . Clay Center.

Basye, Arthur H., A. B. '05, University of Kansas, *European History, Economics*, Lawrence.

Bell, Bonnie, A. B. '05, University of Kansas, *Sociology, French*, . . . . . Lawrence.

*Bender, John Frederick, A. B. '06, University of Kansas, *German*, . . . Holliday.

Bevier, Patience, A. B. '04, Ohio Wesleyan, *English Literature*, . . . . Topeka.

*Bigelow, Oliver P., A. B. '06, University of Kansas, *Zoology*, . . . . . Lawrence.

Bisset, Charles, A. B., San Joaquin College, *Sociology*, . . . . . Holton.

Brown, Waitman Wiley, A. B., Campbell College, *Chemistry*, . . . . Lawrence.

Carr, Clara M., A. B. '05, University of Kansas, *European History*, . . . . Leavenworth.

Chaney, Everett Burns, A. B. '04, University of Kansas, *Anatomy*, . . . Independence.

Chapman, Inez, A. B. '01, University of Kansas, *German*, . . . . . Glasco.

Clarke, Adna G., A. B. '00, University of Kansas, *Mathematics*, . . . . Lawrence.

Clarke, Helen M., A. B. '03, University of Kansas, *English*, . . . . . Lawrence.

Clarke, Mary Patterson, A. M. '05, University of Kansas, *History, Sociology,* . Lawrence.
*Cope, Alfred B., A. B. '06, University of Kansas, *Education, Sociology,* . . Ozawkie.
Copley, Mary Cecilia, A. B. '05, University of Kansas, *French,* . . . . . Lawrence.
Corp, Charles Ives, B. S. '03, University of Kansas, *Engineering,* . . . . Lawrence.
Couch, Alvan Harvey, A. B. '94, University of Kansas, *Botany, Education,* . . Eudora.
Cross, Roy, A. B. '05, University of Kansas, *Chemistry,* . . . . . Ellis.
Cureton, Nellie King, A. B. '05, University of Kansas, *Latin,* . . . . . Lawrence.
Dickson, James, A. B. '01, University of Kansas, *Chemistry,* . . . . . Auburn.
Dillard, Mary J., A. B. '96, University of Kansas, *English Literature,* . . Lawrence.
Duke, Mary Augusta, A. B. '04, University of Kansas, *Zoology,* . . . Lawrence.
Ellsworth, Evelyn Grace, A. B. '02, University of Kansas, *Education,* . . Independence.
Emley, Samuel Charles, A. B. '99, University of Kansas, M. D. '02, Rush Medical College, *Zoology, Bacteriology,* . Lawrence.
Eyerly, Tema L., A. B. '05, University of Kansas, *Geology,* . . . . . Marysville.
Faragher, Warren Fred, A. B. '05, University of Kansas, *Chemistry,* . . Sabetha.
Ford, Thomas Bartlett, A. B. '04, University of Kansas, *Chemistry,* . . . . Lawrence.
*Gilmore, Gertrude, A. B. '06, University of Kansas, *Sociology,* . . . . . Lawrence.
Gowans, Ralph, A. B. '05, University of Kansas, *History,* . . . . . Lawrence.
Greene, Marie A., A. B. '04, University of Kansas, *Philosophy,* . . . . Topeka.
Glenn, Pressley Adams, A. B. '98, University of Kansas, *Botany,* . . . Highland.
Hamill, Claude Emmitt, A. B. '98, University of Kansas, *Anatomy,* . . . Lawrence.
Hartman, Frank A., A. B. '05, University of Kansas, *Zoology,* . . . . Kansas City.

Hayward, Grace A., A. B. '05, University of Kansas, *English*, . . . . Lawrence.
Hooper, Thomas, A. B. '00, University of Kansas, *Geology*, . . . . . Smith Center.
Hoskins, Roy Graham, A. B. '05, University of Kansas, *Zoology*, . . . Lawrence.
Hall, Justus Otho, A. B. '98, University of Kansas, *Education*, . . . . Beloit.
Ise, Charles D., A. B. '05, University of Kansas, *Geology*, . . . . . Holton.
*Kayser, Jesse W., A. B. '06, University of Kansas, *History*, . . . . . *Kansas City, Mo.*
*Kepner, Wilford L., B. S. '06, University of Kansas, *Geology, Mineralogy*, . . Sabetha.
Kruse, Henry Otto, A. M. '03, University of Kansas, *German, Philosophy*, . Lawrence.
Landrum, Charles Hansford, A. M. '05, University of Kansas, *European History*, Belle Plaine.
Leach, Minnie Luella, A. B. '01, University of Kansas, *English*, . . . Leavenworth.
*Leonard, Annette, A. B. '06, University of Kansas, *American History*, . . . Emporia.
Leslie, Elizabeth, A. B. '03, University of Kansas, *Sociology*, . . . . . Lawrence.
Lindner, Ethel Florence, A. B. '05, University of Kansas, *German*, . . Lawrence.
Lofty, John, A. B. '99, University of Kansas, *Botany*, . . . . . Salina.
°Mayberry, James Willard, A. B. '01, University of Kansas, *Chemistry*, . . *Edmond, Okla.*
*Melvin, Frank Edgar, A. B. '06, University of Kansas, . . . . . Iola.
Miller, Henry B., A. B. '03, Baker University, *Anatomy, Botany*, . . . . Rossville.
*Mitchell, Ulysses Grant, A. B. '06, University of Kansas, *American History*, . Lawrence.
Mossler, Hettie, A. B. '04, University of Kansas, *French*, . . . . . Lawrence.
McCroskey, Orrell Emily, A. B. '01, University of Kansas, *German*, . . . Halstead.
Nelson, Edward Franklin, A. B., Bethany College, *Chemistry*, . . . . Lindsborg.
Nickles, Jennie, A. B. '01, University of Kansas, *German*, . . . . . Hays.

Olson, Karl Elof, A. B., Bethany College, Lindsborg.
Pennington, Celia, A. B. '98, University of Kansas, *French, English*, . . . Lawrence.
*Pitcher, Arthur Dunn, A. B. '06, University of Kansas, . . . . . Havensville.
Potter, Ulysses G., A. B. '04, University of Kansas, *Mathematics*, . . . . Hiawatha.
*Priestly, Gertrude F., A. B. '06, University of Kansas, *English Literature*, . Lawrence.
*Reed, Trilla G., A. B. '06, University of Kansas, . . . . . Iola.
Renn, Lula, A. B. '01, University of Kansas, *English Language*, . . . . Wellington.
Rohrer, Christian A., A. B. '97, University of Kansas, *Physics*, . . . . . Kansas City.
*Roller, Harry F., A. B. '06, University of Kansas, *Sociology*, . . . . . Lecompton.
*Robertson, William Rees B., A. B. '06, University of Kansas, *Zoology*, . . . Manchester.
*Rupert, Frank F., A. B. '06, University of Kansas, *Chemistry*, . . . . . Arkansas City.
*Sargent, John G., A. B. '06, University of Kansas, *Chemistry*, . . . . . McPherson.
Scammon, Richard E., A. B. '04, University of Kansas, *Zoology*, . . . *Olden, Mo.*
Shane, Myrtle O., A. B. '02, University of Kansas, *English Literature*, . . Lawrence.
Shirk, James A. G., M. S. '05, University of Kansas, *Mathematics*, . . . Leavenworth.
Smith, Chester A., B. S. '04, University of Kansas, *Engineering*, . . . . Florence.
*Smith, Lizzie W., A. B. '76, University of Kansas, *Sociology*, . . . . . Stockton.
*Stelter, Benjamin F., A. B. '06, University of Kansas, *English Language*, . . Leavenworth.
Stone, Sadie M., A. B. '95, University of Kansas, *English*, . . . . . Lawrence.
Street, Margaret Hortense, A. B. '05, University of Kansas, . . . . . Lawrence.
Stromquist, Walter G., A. B., Bethany College, *Chemistry*, . . . . . Lindsborg.
Taylor, Cora Alice, A. B. '04, University of Kansas, *Sociology*, . . . . . Lawrence.

Unruh, Agnes, A. B. '04, University of Kansas, *English*, . . . . . Larned.
*Virmond, Georgia, A. B. '06, University of Kansas, . . . . . Hays.
Walling, Lalia, A. B. '05, University of Kansas, *Physiology*, . . . . Lawrence.
*Wampler, Oliver N., B. S. '06, University of Kansas, *Engineering*, . . . *Webb City, Mo.*
Washburn, Edetha, A. B. '05, University of Kansas, *Sociology*, . . . . . Ottawa.
Wasson, Jennie Barbara, A. B. '04, University of Kansas, *Education*, . . *Grand Rapids, Mich.*
*Weatherby, LeRoy S., A. B. '06, University of Kansas, *Chemistry, Education*, Lawrence.
Williston, Ruth, B. S. '05, University of of Chicago, *Zoology, Botany*, . . *Chicago, Ill.*
*Zook, George Frederick, A. B. '06, University of Kansas, *European History*, Fort Scott.

Graduates, 90.

## The College.

SENIORS.

| | |
|---|---|
| Ahlborn, Ida May, | Smith Center. |
| Alder, Helen A., | Lawrence. |
| Alford, Joseph Savage, | Lawrence. |
| Bailer, Lloyd, | Kansas City. |
| Baird, Georgia, | Highland. |
| Baker, Eva, | Garden City. |
| Barlow, Frank T., | Wellington. |
| Barnett, Ruth, | Wellington. |
| Bartholow, J. Wharton, | Williamsburg. |
| Battey, Lita Alleen, | Powhattan. |
| Bechtel, Ada, | Hiawatha. |
| Beckwith, Abbey, | Hiawatha. |
| Bender, John F., | Holliday. |
| Benn, Rara, | La Crosse. |
| Bennett, Mary J., | Pittsburg. |
| Berger, Hedwig F., | Kansas City. |
| Bigelow, Oliver, | Lawrence. |
| Blake, Lalla Etta, | *Boulder, Colo.* |
| Bliss, Charles Jay, | Oskaloosa. |
| Borland, Lois, | Scranton. |
| Boyle, Ellen, | Boyle. |
| Boyle, Grace Isabel, | Boyle. |
| Bristol, Louise Lida, | Anthony. |
| Brown, Katie, | Lawrence. |
| Brownlee, Howard Joseph, | Lawrence. |
| Brunner, Emile, | Onaga. |
| Bull, Raymond Cooley, | *Cameron, Mo.* |
| Carothers, Willis Herbert, | Hiawatha. |
| Carter, Anna May, | Reno. |
| Cates, Ada, | Chanute. |
| Clinger, Anna Belle, | Lawrence. |
| Collier, Capitola, | Liberal. |
| Collins, Olive, | Lawrence. |
| Cook, Cora Nina, | Scranton. |
| Cooper, Lawrence, | Peabody. |
| Corkill, Charles Kneale, | Lawrence. |
| Cory, Paul McPherson, | Parsons. |
| Cunningham, Kate Belle, | *Kansas City, Mo.* |
| Cureton, Thomas H., | Lawrence. |

Davis, Rowena Mabel, . . . . . Garnett.
Dinsmoor, Edna, . . . . . Lawrence.
Dixon, Marguerite, . . . . . Wichita.
Doubleday, Caroline, . . . . . Lawrence.
Eckley, Bessie, . . . . . Leavenworth.
Francis, John W., . . . . . Kansas City.
Gafford, Earl, . . . . . Minneapolis.
Garrett, Violetta, . . . . . Lawrence.
Gephart, Frank, . . . . . Oskaloosa.
Gilmore, Gertrude, . . . . . Lawrence.
Glenn, Janet, . . . . . Paola.
Greenough, Birdie Oneita, . . . . Wilson.
Harris, Annie Gardner, . . . . . Lawrence.
Harvey, John King, . . . . . Salina.
Heinecke, Edwin Blakely, . . . . Jewell City.
Heinzman, Harry L., . . . . . Topeka.
Hoover, Roy William, . . . . . Mahaska.
Hosford, Katherine, . . . . . Lawrence.
Hoskins, Elsie M., . . . . . Lawrence.
Hudson, Edward Everett, . . . . Lawrence.
Johnsten, Margaret Eliza, . . . . Delphos.
Jones, Effie, . . . . . Howard.
Kayser, Jesse W., . . . . . *Kansas City, Mo.*
Kent, Mabel Etta, . . . . . Paola.
Kilgore, Inez, . . . . . Wichita.
Kinne, Lou, . . . . . Moran.
Kirkwood, Elizabeth Timanus, . . . Emporia.
Kirkwood, Laura, . . . . . Emporia.
Lahmer, Frances Elise, . . . . . Lawrence.
Langworthy, Amy Eunice, . . . . Leavenworth.
Ledgerwood, Vivian, . . . . . Norton.
Leinbach, Chester A., . . . . . Onaga.
Leonard, Annette, . . . . . Topeka.
Lindsay, Celia, . . . . . Lawrence.
Longenecker, Albert M., . . . . . Paola.
Luther, Winnifred, . . . . . Lawrence.
Maddox, Wilbur F., . . . . . Oberlin.
Makimson, Lista, . . . . . Kansas City.
Mayfield, William Madison, . . . . Lansing.
Melvin, Frank Edgar, . . . . . Iola.
Merwin, Ivah E., . . . . . Stockton.
Mitchell, Florence B., . . . . . Iola.
Mitchell, Ulysses Grant, . . . . . Lawrence.
Mulvihill, Celia, . . . . . Perry.

McKnight, Grace Catherine, . . . . Hiawatha.
McReynolds, Samuel A., . . . . . Lawrence.
Nash, Ella May, . . . . . Lyons.
Newman, Calvin Hood, . . . . . Emporia.
Noyes, Elmira, . . . . . *Portsmouth, Va.*
Olander, Maude, . . . . . Kansas City.
Pearson, Clarence, . . . . . Lawrence.
Philbrook, Margaret Elizabeth, . . . Lawrence.
Phillips, Frank Dewey, . . . . . Lawrence.
Pilcher, Georgia Elizabeth, . . . . Lawrence.
Pitcher, Arthur Dunn, . . . . . Havensville.
Potts, Nellie Brander, . . . . . Paola.
Rambo, Josie, . . . . . Lawrence.
Reed, Gertrude G., . . . . . Topeka.
Reed, Trilla, . . . . . Iola.
Robertson, William Rees B., . . . . Manchester.
Robinson, David B., . . . . . Lawrence.
Roller, Harry, . . . . . Lecompton.
Rose, Rial Catlin, . . . . . Cawker City.
Rupert, Frank Finch, . . . . . Arkansas City.
Sargent, John Gibson, . . . . . McPherson.
Satterthwaite, Walter Benjamin, . . . Girard.
Shippy, Harvey, . . . . . Woodbine.
Siler, Charles A., . . . . . Lawrence.
Sinclair, Benjamin Franklin. . . . . Hooser.
Sirpless, Eleanor Ann, . . . . . Lawrence.
Smith, Mary Grace, . . . . . Hutchinson.
Starin, William Alfred, . . . . . Netawaka.
Stelter, Benjamin F., . . . . . Lawrence.
Stelter, Grace May, . . . . . Lawrence.
Tuthill, Herbert, . . . . . Salina.
Van Arsdale, Jonathan, . . . . . Lawrence.
Van Fleet, Charles L., . . . . . Kingman.
Van Cleave, Maude Beryle, . . . . Kansas City.
Virmond, Georgia, . . . . . Hays.
von Unwerth, Margarethe, . . . . *Kansas City, Mo.*
Warren, Luella, . . . . . Hutchinson.
Weatherby, Le Roy S., . . . . . Lawrence.
Weaver, Aileen March, . . . . . Lawrence.
West, Will Glentworth, . . . . . McPherson.
Wilson, Christmas, . . . . . Iola.
Wulfekuhler, Fred Otto, . . . . . Leavenworth.
Zook, George Frederick, . . . . . Fort Scott.

Seniors, 126.

JUNIORS.

Alford, Theodore Crandall, . . . . Lawrence.
Barker, Louise, . . . . . Girard.
Bernhard, Lillie, . . . . . Lawrence.
Bernhard, Rillie, . . . . . Lawrence.
Bingler, Alberta Luckey, . . . . . Lawrence.
Blair, Gracia, . . . . . Lawrence.
Bousfield, Midian Othello, . . . . Kansas City.
Brannon, William A., . . . . . Lawrence.
Brawley, Mark Abernathy, . . . . Frankfort.
Brock, Ivy Grace, . . . . . Girard.
Brueser, Clara E. . . . . *Kansas City, Mo.*
Calhoun, William Kenneth, . . . . Fort Scott.
Campbell, Harry, . . . . . Wichita.
Carter, Anna Mabel, . . . . . Lawrence.
Clark, Earl Finley, . . . . . Overbrook.
Clark, May Bernice, . . . . . Lawrence.
Coleman, R. V., . . . . . Oneida.
Crumb, Ebb S., . . . . . Galena.
Cunnick, Ross, . . . . . Sabetha.
Dart, Edna R., . . . . . Lawrence.
Douglas, Roy O., . . . . . Mound City.
Emmett, Eveline, . . . . . Lawrence.
Essick, Inez Louise Wymon, . . . . Kanopolis.
Everett, Wilimina, . . . . . Lawrence.
Everingham, J. Sumner, . . . . . Topeka.
Finch, Howard A., . . . . . Neal.
Fisher, Wilhelm, . . . . . Lyons.
Foraker, Nora, . . . . . Wellington.
French, Bernice M., . . . . . Lawrence.
Gage, John Bailey, . . . . . *Kansas City, Mo.*
Getty, Carrol Orwig, . . . . . Ellsworth.
Gift, Elmer Birdsell, . . . . . Smith Center.
Grant, F. Richard, . . . . . Ellinwood.
Gregg, Ernest, . . . . . Lawrence.
Griffin, Edith, . . . . . Lawrence.
Havens, Hellen, . . . . . Minneapolis.
Hawkinson, John, . . . . . McPherson.
Hayden, Mary Lorena, . . . . . Holton.
Hazen, Leonard, . . . . . Lawrence.
Heeney, Edwin Joseph, . . . . . Severance.
Heizer, Florence Mabelle, . . . . Osage City.
Hill, John Walter, . . . . . Eudora.

Hodgson, Blanche H., . . . . . Lawrence.
Houghton, Howard, . . . . . Beloit.
Hudson, Hazel, . . . . . Fredonia.
Humphrey, Karl E., . . . . . El Reno, Okla.
Jackson, Ruby, . . . . . Horton.
Jones, Lucy Isabella, . . . . . Lawrence.
Kiser, Florence, . . . . . Clinton.
Klingberg, Frank Joseph, . . . . . Dillon.
Knott, Joseph Israel, . . . . . Yates Center.
Lamborn, Clem, . . . . . Leavenworth.
Lander, Addie F., . . . . . Newton.
Madden, Pauline, . . . . . Mound City.
Marsh, Mabel, . . . . . Kinsley.
Marshall, Marjorie, . . . . . Lawrence.
Martin, Roy H., . . . . . *Kansas City, Mo.*
Mickey, Mary Emily, . . . . . Valley Center.
Mitchell, Caroline, . . . . . Lawrence.
Monahan, Dora, . . . . . Armourdale.
Moore, Roy R., . . . . . Chapman.
Muckle, Grace, . . . . . Topeka.
Myers, Isaiah Stanley, . . . . . Fort Scott.
McDonald, Lotta, . . . . . Norton.
Newlon, Olga, . . . . . Winfield.
Osborn, Monroe, . . . . . Lawrence.
Osmond, Margaret, . . . . . Great Bend.
Paulen, Blanche, . . . . . Fredonia.
Pfeifer, Herman, . . . . . Minneapolis.
Phillips, Birdie Ella, . . . . . Linwood.
Putnam, George Ellsworth, . . . . . Ottawa.
Pyle, Capitola, . . . . . Haviland.
Ramsey, Chester Arthur, . . . . . Redfield.
Rankin, Alice Mary, . . . . . Lawrence.
Relihan, Harry, . . . . . Smith Center.
Rhodes, Harry Herbert, . . . . . Wellington.
Sellers, Alice Pearl, . . . . . Osawatomie.
Shanklin, Flora Marie, . . . . . Lawrence.
Sherman, Lulu Gertrude, . . . . . Lawrence.
Shields, Florence, . . . . . Garnett.
Shore, Butler Benjamin, . . . . . Hutchinson.
Simmons, Henry Elliott, . . . . . Severance.
Smith, Anna C., . . . . . Lawrence.
Spilman, Minnie, . . . . . McPherson.
Squire, Harry Elmore, . . . . . Attica.
Sterling, Genevieve, . . . . . Lawrence.

Stevens, Vera, . . . . . Lawrence.
Stevenson, Nellie May, . . . . . Lawrence.
Stickel, Zulu I., . . . . . Hiawatha.
Swan, Clifford Howard, . . . . . Pittsburg.
Webb, Horton Emmett, . . . . . Howard.
Williams, Ada Lucile, . . . . . Newton.
Wolcott, Grace, . . . . . Lawrence.
Woodbury, Emma Blanche, . . . . . Lawrence.
Woodhead, Madge, . . . . . Emporia.
Zurcher, Rose Frances, . . . . . Newton.

Juniors, 96.

## SOPHOMORES.

Angney, Haughey, . . . . . Belle Plaine.
Angney, Urbin, . . . . . Belle Plaine.
Bailey, Beulah, . . . . . Lyndon.
Baker, Grace Darling, . . . . . Columbus.
Barrows, Raymond Albert, . . . . . Junction City.
Barteldes, Otto August, . . . . . Lawrence.
Bigham, Alvin, . . . . . Topeka.
Bingler, Ola Lucky, . . . . . Lawrence.
Bischoff, Henry John, . . . . . Washington.
Blakey, Eleanor, . . . . . Pleasanton.
Bohannon, Bailey, . . . . . Hiawatha.
Brock, T. Gertrude, . . . . . *Excelsior Sp'gs, Mo.*
Burnham, Lucia, . . . . . Lawrence.
Bush, Fred Fernley, . . . . . Junction City.
Caldwell, Lorrin Linwood, . . . . . Hoisington.
Cambern, Fred Jessup, . . . . . Erie.
Campbell, Kenneth, . . . . . Clay Center.
Carpenter, Clara, . . . . . Lawrence.
Clark, Genevieve, . . . . . Leavenworth.
Cobbs, Gertrude Ellen, . . . . . Horton.
Cook, Robert Roy, . . . . . Clay Center.
Cooke, Sidney K., jr., . . . . . Leavenworth.
Cornelison, Robert Murrell, . . . . . Reserve.
Cox, Roy Arminius, . . . . . Augusta.
Creswell, Alberta, . . . . . Lawrence.
Daum, Verna, . . . . . St. Marys.
Davis, Harry Jefferson, . . . . . Mingo.
Davis, Philip, . . . . . Lawrence.
Dean, Imogene Curtess, . . . . . Marion.
De Moss, Edith, . . . . . Thayer.
Dolbee, Cora Emmett, . . . . . Lawrence.
Duer, Guy Robert, . . . . . Nickerson.

Engle, Earl William, . . . . . Topeka.
Ergenbright, Mabel S., . . . . . Independence.
Eveland, Helen V., . . . . . *Kansas City, Mo.*
Fell, Nina Belle, . . . . . Concordia.
Funk, Neva, . . . . . Iola.
Galloway, Milton, . . . . . Wa Keeney.
Greenlees, Agnes Mary, . . . . . Lawrence.
Griesa, William S., . . . . . Lawrence.
Guthrie, Guy William, . . . . . Marysville.
Hart, Harry, . . . . . Beloit.
Haskett, Iva, . . . . . Concordia.
Heeney, Georgette, . . . . . Severance.
Henlen, Florence Camilla, . . . . . Herington.
Heuser, Chester Henry, . . . . . Fort Scott.
Hill, Benjamin Samuel, . . . . . Walnut.
Hoffman, Charles, . . . . . Elmo.
Horkmans, David Martin, . . . . . Concordia.
Hovey, Wallace Franklin, . . . . . Hiawatha.
Ice, E. Ellen, . . . . . Lawrence.
Isaacson, Nellie, . . . . . Wetmore.
Ise, John Christopher, . . . . . Downs.
Jackson, Addie, . . . . . Horton.
Jones, Hal C., . . . . . Iola.
Kent, Mattie, . . . . . Lawrence.
Kern, Elizabeth L., . . . . . *Kansas City, Mo.*
Kohman, Henry Adolph, . . . . . Dillon.
Lane, Lanorah S., . . . . . Lawrence.
Laptad, Evadne, . . . . . Lawrence.
Lemmon, Lura Lee, . . . . . *Warrensburg, Mo.*
Lenig, Olive Amelia, . . . . . Lawrence.
Long, Octavia Cornelia, . . . . . Lawrence.
Lyon, Fred Masters, . . . . . Hillsdale.
Maffet, Maud A., . . . . . Lawrence.
Manley, Alma, . . . . . Junction City.
March, George M., . . . . . Lawrence.
Maris, Harry Boyd, . . . . . Stockton.
Maris, Mary Avis, . . . . . Cloverdale.
Markley, Lola Ethel, . . . . . Lawrence.
Marshall, Daniel Benjamin, . . . . . Lincoln.
Marshall, George Truesdell, . . . . . Concordia.
Marshall, Wikoff, . . . . . Chase.
Maughlin, Mary Belle, . . . . . Lawrence.
Miller, Milton Bradford, . . . . . Osage City.
Miller, William Jesse, . . . . . Osage City.

| | |
|---|---|
| Minor, Mary Emma, | *Kansas City, Mo.* |
| Mitchell, Charles William, | Cherryvale. |
| Mitchum, Lillie, | Atchison. |
| Moodie, Hubert, | Lawrence. |
| Moodie, Leslie, | Lawrence. |
| Moody, Rebecca Elizabeth, | Lawrence. |
| Morgan, Edwin, | Clay Center. |
| McCleverty, Adelbert Durkee, | Fort Scott. |
| McDaniel, Eugenie, | La Crosse. |
| McLean, Helen, | Topeka. |
| Parker, J. Howard, | Lawrence. |
| Pendleton, Claudia, | Lawrence. |
| Petit, Julian Cæsar, | Walnut. |
| Petit, William D., | Walnut. |
| Phenicie, Ruth Ethel, | Reno. |
| Pinney, Mary Edith, | Wilson. |
| Rankin, Madonna Alice, | *Albuquerque, N. M.* |
| Rauch, Esther May, | Topeka. |
| Reynolds, Kate, | Clay Center. |
| Rhodes, Maude Olive, | Dodge City. |
| Richards, Aute, | Lawrence. |
| Richter, Alfred, | Kansas City. |
| Rinehart, Blanche Elvena, | Lawrence. |
| Roberts, Roy Allison, | Lawrence. |
| Root, Burton, | Lincoln. |
| Schloz, Katharina, | Argentine. |
| Schwinn, John Morton, | Wellington. |
| Scott, Winfield, | Girard. |
| Sears, Burton Peabody, | Lawrence. |
| Shaffer, Susie Grace, | Hays. |
| Shearer, Nellie, | Lawrence. |
| Sheridan, Bernard Long, | Paola. |
| Siceloff, David Guy, | Belle Plaine. |
| Simpson, Henry, | Kansas City. |
| Smith, Cecil, | Beloit. |
| Smith, Henry Hume, | Stockton. |
| Smith, Lona L., | Greenleaf. |
| Smith, Verni L. C., | Colby. |
| Stanton, Fred Hadley, | Lawrence. |
| Steele, Hattie, | Belvoir. |
| Sterling, Eugenie, | Lawrence. |
| Stockwell, Roy, | Effingham. |
| Strawn, William, | Columbus. |
| Stuart, Geraldine, | Lawrence. |

Thompson, Katherine Zelma, . . . . Lawrence.
Tice, Elbert A., . . . . . Howard.
Tritt, Alfred Garfield, . . . . . Wellington.
Turner, Edith, . . . . . Colony.
Van Cleave, Thomas, . . . . . Kansas City.
Wall, Paul Jean, . . . . . Wichita.
Wallace, Cora Lee, . . . . . Topeka.
Wallace, May, . . . . . Lawrence.
Warkentin, John H., . . . . . Hillsboro.
Wiggam, Augusta, . . . . . Emporia.
Wilcox, Winifred, . . . . . Concordia.
Williams, Lillie Helena, . . . . . Lawrence.
Young, Carl Henry, . . . . . Portland.
Zimmerman, Grace, . . . . . Hiawatha.
Zimmerman, Mabel, . . . . . Hiawatha.

Sophomores, 135.

## FRESHMEN.

Abercrombie, Mary Little, . . . . Kansas City.
Adams, Maude, . . . . . Columbus.
Ahlborn, Karl, . . . . . Smith Center.
Alexander, Winifred Davis, . . . . Chanute.
Alford, Katherine Sylvia, . . . . Lawrence.
Allen, Annie, . . . . . Independence.
Allen, Lloyd Ellsworth, . . . . . Galena.
Anderson, Adda, . . . . . Chetopa.
Apollo, Otto, . . . . . Fredonia.
Armsby, Harold Marks, . . . . . Council Grove.
Asher, Alice M., . . . . . Lawrence.
Ayers, Nola May, . . . . . Horton.
Bader, Jesse Morn, . . . . . Le Roy.
Bailey, Reginald O. K., . . . . . Lawrence.
Baldridge, Jessie Belle, . . . . . *La Junta, Colo.*
Barnes, Edgar Rankin, . . . . . Blue Mound.
Barnett, Edith Edna, . . . . . *Kansas City, Mo.*
Barrows, Martha Ella, . . . . . Junction City.
Barry, Bernese, . . . . . Belle Plaine.
Bass, Mary Lenore, . . . . . McPherson.
Baxter, Jennie, . . . . . Pittsburg.
Beatty, Jerome Griswold, . . . . Lawrence.
Bennett, Ethel Vale, . . . . . Iola.
Black, John Lee, . . . . . Lawrence.
Blair, Clyde McKittrick, . . . . . Lawrence.
Bond, Jay, . . . . . Lawrence.
Bossi, Vincent Volta, . . . . . Arkansas City.

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|---|---|
| Brobst, Myrtle Ada, | Osborne. |
| Brown, Guy Le Roy, | Sabetha. |
| Brown, Walter Eugene, | Holton. |
| Brownlee, Esther Elizabeth, | Lawrence. |
| Buck, Lucy Hayes, | Lawrence. |
| Buckles, Mary Regene, | Hiawatha. |
| Burchfiel, Otha Parmer, | Anthony. |
| Burkholder, William, | McPherson. |
| Burnett, Clanrold, | Girard. |
| Cady, Walter Wesley, | Augusta. |
| Cahill, Leslie, | Lucas. |
| Campbell, Watson, | Attica. |
| Carney, Walter Willis, | Beloit. |
| Carter, Frances, | Lawrence. |
| Chalkley, Harold William, | Lawrence. |
| Chesbro, Claude, | Hutchinson. |
| Christian, Estella, | Rosedale. |
| Clarke, Adah Alberta, | *Sioux Falls, S. Dak.* |
| Clay, Claude Alfred, | Nickerson. |
| Clyde, Nathana Lore, | Kansas City. |
| Coe, Clyde Grover, | Emporia. |
| Coe, Jessie May, | Emporia. |
| Coffman, Celia Lenora, | Lawrence. |
| Cole, Russell Alger, | Marysville. |
| Collins, Grace Manifold, | Lawrence. |
| Converse, Clara Lillian, | Burlington. |
| Cooper, James Bostwick, | Kansas City. |
| Cooper, Leslie Louise, | Lawrence. |
| Copley, Gertrude Edith, | *Kansas City, Mo.* |
| Copper, Francis Le Roy, | Cherokee. |
| Corwine, Edgar Glenn, | Mulvane. |
| Crowell, George F., | Attica. |
| Cunnick, Irene, | Lawrence. |
| Dallas, Stella Jessie, | Topeka. |
| Davis, Harry W., | Osage City. |
| DeBerry, James Lowe, | Paola. |
| DeFrantz, Faburn, | Topeka. |
| DeLapp, Verner Victor, | Cherokee. |
| DeWeese, Will George, | Salina. |
| Dodderidge, Henry Alfred, | White City. |
| Doubleday, Floyd Egbert, | Lawrence. |
| Downes, Clinton, | Marion. |
| Dunn, Grove Lee, | Onaga. |
| Eggleston, Mabel, | *Kansas City, Mo.* |

| | |
|---|---|
| Ellis, Frank Kale, | *Kansas City, Mo.* |
| Eson, Myra Gertrude, | Kingman. |
| Evans, Albert, | Kansas City. |
| Everett, Nellie May, | Lawrence. |
| Fairchild, Marshall,* | Kingman. |
| Fansher, Ray Ackroyd, | Sabetha. |
| Faragher, Paul Vance, | Sabetha. |
| Fay, Roland Cecil, | Olathe. |
| Fife, Clyde Lee, | *Kansas City, Mo.* |
| Fillmore, Louis Eupheme, | Blue Rapids. |
| Fincke, Amanda, | Rosedale. |
| Finklea, Floyd A., | Troy. |
| Finney, Guy, | Wamego. |
| Fisher, Thekla Adolphie, | Lyons. |
| Fleenor, Beaty Hope, | Lecompton. |
| Foraker, Dora, | Wellington. |
| Forbes, Benjamin N., jr., | Wathena. |
| Froelich, Jonathan Fred, | Enterprise. |
| Gafford, Edna May, | Minneapolis. |
| Galloway, Lewis H., | Wa Keeney. |
| Gill, Ruth, | Clyde. |
| Glenn, Olive, | Paola. |
| Gowenlock, Thomas Russell, | Clay Center. |
| Grattan, James Edmund, | Sedgwick. |
| Gray, Frances Elizabeth, | Lawrence. |
| Green, Wendell, | Kansas City. |
| Griffin, Walter Timothy, | Lawrence. |
| Gwinner, Grace Ione, | Dodge City. |
| Ham, Edith, | Parsons. |
| Hanson, Agnes Caroline, | Lawrence. |
| Hardiman, Edward James, | Topeka. |
| Hart, Lucretia Wilson, | Hiawatha. |
| Harvey, Clarence, | Salina. |
| Hepworth, Richard, | Burlingame. |
| Herman, Harold C., | Reserve. |
| Hiatt, George Robinson, | Lawrence. |
| Hoge, Josephine Clare, | Wellington. |
| Hogue, Lillah Eveline, | Springhill. |
| Holmes, Clarence Price, | Emporia. |
| Hornaday, Grace Bell, | Lawrence. |
| Hosford, Ruby Cornelia, | Lawrence. |
| Houston, Jessie Nell, | Wichita. |

* Deceased.

Hughes, Anna Elizabeth, . . . . . Fort Scott.
Hunter, Harry, . . . . . Wellington.
Insley, Earl F., . . . . . Thayer.
Jacobs, Woodie, . . . . . Rosedale,
Johns, Floyd Marion, . . . . . Glasco.
Johnson, Mabel Minerva, . . . . . Palmer.
Johnson, Ralph Charles, . . . . . Cottonwood Falls.
Johnston, Mary Helen, . . . . . Lawrence.
Kalin, Oscar, . . . . . Clay Center.
Kemp, Delbert Clinton, . . . . . Lawrence.
Keneaster, Elizabeth Fay, . . . . Lawrence.
Kenney, Ruth, . . . . . Lawrence.
Kiefer, Norman, . . . . . Lawrence.
Krehbiel, August Robert, . . . . . Lawrence.
Kuns, Frank, . . . . . McPherson.
Laird, Elizabeth Lucia, . . . . . *Kansas City, Mo.*
Leddy, Margaret Adaline, . . . . Conway Springs.
Leonard, Louise, . . . . . Lawrence.
Leslie, Grace Mease, . . . . . Lawrence.
Livengood, Fay E., . . . . . Hutchinson.
Livers, Arnold Fleming, . . . . . Esbon.
Loomis, Blanche, . . . . . Fredonia.
Lord, Carrie Winslow, . . . . . Wamego.
Lorig, Marx Leopold, . . . . . Oberlin.
Lowe, Cornelius Olas, . . . . . Lawrence.
Luckan, Bertha Gustav, . . . . Lawrence.
Lupton, Margaret Edna, . . . . . Hoxie.
Magee, Harry Lyle, . . . . . Blue Mound.
Maret, Gertrude, . . . . . Pratt.
Matlock, Thomas, . . . . . Wichita.
Maughlin, Emma Etta, . . . . . Lawrence.
Means, Inez May, . . . . . Kansas City.
Merker, Gertrude Wilhelmina, . . . Paola.
Merstetter, Amy, . . . . . Kansas City.
Mitchell, Hattie, . . . . . Caney.
Mitchell, Zella, . . . . . Wellington.
Morrow, Ernest, . . . . . Ashton.
Morton, Gertrude, . . . . . Topeka.
McCarty, Virgil Warren, . . . . . La Harpe.
McCurdy, Mildred, . . . . . Lawrence.
McDaniel, Edward Ernest, . . . . Clay Center.
McElfresh, Jessie Lee, . . . . . Osage City.
McKibben, Clay, . . . . . Belpre.

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McNaughton, Alicia Bleakley, . . . Tonganoxie.
McNutt, Dora, . . . . . Eureka.
McQuown, William I., . . . . . Walton.
McShane, Francis, . . . . . Gardner.
Naramore, Archie Pond, . . . . . Herington.
Nevens, Thomas Arthur, . . . . . Garnett.
Neylon, Ida Shannon, . . . . . Paola.
Norman, Martha Jane, . . . . . *Kansas City, Mo.*
O'Hara, George Henry, . . . . . Independence.
Parker, Mary Elizabeth, . . . . . Lawrence.
Peard, Roger Wood, . . . . . Lawrence.
Peet, William Joseph, . . . . . *Kansas City, Mo.*
Penn, Pertilla, . . . . . Atchison.
Perkins, Helen Marguerite, . . . . *Cleveland, Ohio.*
Perkins, Lola May, . . . . . Lawrence.
Phillips, Ruby Anna, . . . . . Burlingame.
Phillips, William Sanford, . . . . Linwood.
Pickens, Minnie Laura, . . . . . Lawrence.
Pile, Leslie Fulkerson, . . . . . Portland.
Poindexter, Martin Hatfield, . . . . Topeka.
Pollman, Hermena, . . . . . La Cygne.
Powell, May, . . . . . Leavenworth.
Prunty, Charles Merle, . . . . . Wellington.
Pryor, Ralph James, . . . . . Lawrence.
Radell, Clara, . . . . . Pittsburg.
Reno, Edward Newton, . . . . . Lawrence.
Riesen, Emil Richer, . . . . . Hillsboro.
Rinker, Julia Edith, . . . . . Wa Keeney.
Riste, Faye Margaret, . . . . . Norton.
Riste, Rose Alma, . . . . . Norton.
Robertson, John Woodburn, . . . . Lawrence.
Rogers, Anna May, . . . . . *Kansas City, Mo.*
Rogers, Elizabeth, . . . . . Chanute.
Royer, Clifford Fry, . . . . . Abilene.
Rummell, Charles William, . . . . Wichita.
Russell, Earl Paul, . . . . . Paola.
Russell, Nellie Blanche, . . . . . Kansas City.
Salthouse, Wirt Clifford, . . . . . McPherson.
Satterthwaite, Joseph, . . . . . Douglass.
Schmitz, Minta, . . . . . Paola.
Shea, John, . . . . . Lawrence.
Shefler, Viola Florence, . . . . . Linwood.
Shipley, Hattie Caroline, . . . . . Belleville.
Sippy, Mildred Evilene, . . . . . Belle Plaine.

| | |
|---|---|
| Smith, Blanche, | *Pleasant Hill, Mo.* |
| Smith, Eustace, | Kinsley. |
| Smith, Katherine O'Donnell, | Stockton. |
| Smith, Mary Alice, | Lawrence. |
| Smith, Paul, | *Kansas City, Mo.* |
| Smith, Ralph, | *Kansas City, Mo.* |
| Spaulding, Iva Maud, | *Kansas City, Mo.* |
| Spray, Lester Ellsworth, | Lawrence. |
| Steeper, Tinsley, | Lawrence. |
| Sterling, Scott, | Lawrence. |
| Stewart, Hugh Vantress,* | Council Grove. |
| Stewart, William Pearson, | Wellington. |
| Stocks, Fred Loveland, | Blue Rapids. |
| Stone, Rosalia Rachel, | Walton. |
| Stryker, William Lester, | Fredonia. |
| Sweeney, Thomas Joseph, | Lawrence. |
| Templin, Alice, | Lawrence. |
| Thestrup, Grace Elizabeth, | Williamsburg. |
| Thomas, Nadia Venita, | Belleville. |
| Thompson, Fred Marion, | Herington. |
| Thompson, Pearl Edna, | Topeka. |
| Thoms, John Orville, | Blue Mound. |
| Toothaker, Mary Isabel, | Argentine. |
| Trekell, Emery, | Wellington. |
| Waters, Henry Clay, | Galena. |
| Wattles, Willard Austin, | Bayneville. |
| Weaver, Amorette Bullene, | Lawrence. |
| Weidlein, Edward Roy, | Augusta. |
| Weldon, Ben B., | Stanley. |
| Wetmore, Frank Aleck, | Independence. |
| White, Rachel, | Delphos. |
| Wick, Ray, | Detroit. |
| Wiedemann, Edward Wm., | Lawrence. |
| Williams, Bertha Juanita, | Lawrence. |
| Williams, Claudius Alexander, | Kansas City. |
| Wilson, Katherine Marie, | Lawrence. |
| Wright, Lucy Jennie, | Lawrence. |

Freshmen, 237.

*Deceased.

SPECIALS.

| | |
|---|---|
| Abraham, R. Clair, | El Dorado. |
| Agrelius, Frank U. G., | Lawrence. |
| Albaugh, Clarence J., | Kingman. |
| Albaugh, Mary Edna, | Kingman. |
| Anderson, Charles O., | Coffeyville. |
| Anderson, Pansy B., | Kansas City. |
| Atwood, James Holden, | Sibley. |
| Betts, Sibyl Dodona, | Kansas City. |
| Bevier, Patience, | Topeka. |
| Blackmar, Charles Maxwell, | *Kansas City, Mo.* |
| Boyd, Nelle Fitzgerald, | Independence. |
| Branch, Hazel Elizabeth, | Wichita. |
| Bunz, Alice Hilda, | *Kansas City, Mo.* |
| Burns, Ira Burton, | Delphos. |
| Campbell, Harry J., | *Elida, N. M.* |
| Cannon, Emma, | Lawrence. |
| Canty, Miles E., | Buffalo. |
| Carter, Eugene Lamar, | Lawrence. |
| Carter, George S., | Marysville. |
| Clark, Ansel Roscoe, | Independence. |
| Clark, Lee Earnest, | Winchester. |
| Clarkson, William T., | Lawrence. |
| Coble, Ward Henry, | Rosedale. |
| Coleman, Orla Loomis, | Oneida. |
| Commons, Clyde, | Devon. |
| Cornelison, Violet,* | Reserve. |
| Douglas, Richard Le Roy, | Crestline. |
| Draper, Henry Fenton, | Oswego. |
| Durkee, Henry Farrar, | Frankfort. |
| Ellsworth, Sheila Hale, | Lyons. |
| Emerick, James Lafayette, | Lawrence. |
| Fairchild, Abijah, | Burrton. |
| Falconer, Helen, | *Chicago, Ill.* |
| Fitzpatrick, Jennie, | Lawrence. |
| Fluke, Frederica, | Lawrence. |
| Ford, Frank Henry, | Lawrence. |
| Fowler, Harry Emerson, | Independence. |
| Gant, Susanna, | Lawrence. |
| Garver, Clarabel, | Humboldt. |
| Gilmore, Charles M., | Lawrence. |
| Goldman, Heim, | Kansas City. |

* Deceased.

| | |
|---|---|
| Graffin, Minnie M., | Eureka. |
| Grant, Helen Janette, | Ellinwood. |
| Griggs, Adessa, | Lawrence. |
| Harris, John Percival, | Ottawa. |
| Hopkins, John Emmett, | Garden City. |
| Ingleman, Anna A., | Lawrence. |
| Ingram, Estella Inez, | Lawrence. |
| Johnson, Anna M., | Windom. |
| Johnson, Clifford Park, | Coffeyville. |
| Jones, Bernice, | Cawker City. |
| Jones, John Paul, | Kansas City. |
| Kemp, Harry Hibbard, | Lawrence. |
| Kennedy, Madge, | Fredonia. |
| Keyser, Rufus, | *Palmyra, Neb.* |
| Krone, Edith Lucile, | Independence. |
| Lamb, Arnott R., | Yates Center. |
| Landrum, Claude Gresham, | Frankfort. |
| Lanter, Anna B., | Olathe. |
| Laslie, Hallie, | Kansas City. |
| Laslie, Katherine, | Kansas City. |
| Legg, Orville Halstead, | McCune. |
| Little, Clarence W., | Carbondale. |
| Livers, Ada Elizabeth, | Ionia. |
| Long, Martin Luther, | Lawrence. |
| Lorimer, Wishard, | Olathe. |
| Lottridge, (Mrs.) Lydia, | Lawrence. |
| Luckey, William J., | Greenleaf. |
| Maher, Mary R., | Kansas City. |
| Mallam, Ellis, | *Kansas City, Mo.* |
| Marks, Adele Elsie, | Lawrence. |
| Miles, Omer J., | Lawrence. |
| Miller, Howard, | Iola. |
| Milton, Sidney McGarvey, | Lawrence. |
| Morton, Jessie K., | Tescott. |
| Mossler, Sadie, | Lawrence. |
| Murray, Joseph W., | Lawrence. |
| McLenon, William, | Effingham. |
| McVey, Walter, | Independence. |
| Neff, Eleanor Alice, | *Kansas City, Mo.* |
| Nossaman, Earl Adrian, | Cunningham. |
| Overman, Chauncey I., | Lawrence. |
| Owen, Minnie Leota, | La Crosse. |
| Owens, Minnie Luetta, | Lawrence. |
| Phillips, Sylvia, | *Kansas City, Mo.* |

Pixley, Marie Louise, . . . . . *Portsmouth, Ohio.*
Poehler, Alma S., . . . . . Lawrence.
Porter, Alice, . . . . . Lawrence.
Porter, Olive, . . . . . Lawrence.
Powell, Charles D., . . . . . Wichita.
Quinn, John Alfred, . . . . . Garden City.
Ray, Robert Jackson, . . . . . Sterling.
Riling, Catherine, . . . . . Lawrence.
Ross, Richard A., . . . . . St. Marys.
Schneider, Carolyn Louise, . . . . Lawrence.
Scott, Pearl Jeanette, . . . . . *Kansas City, Mo.*
Spencer, Clifton A., . . . . . Russell Springs.
Stephens, Elizabeth, . . . . . Lawrence.
Stout, Alga Blythe, . . . . . Lawrence.
Sweezey, Edith, . . . . . Olivet.
Taylor, Raymond G., . . . . . Fort Scott.
Theis, Otto Palmer, . . . . . Ashland.
Thorne, (Mrs.) Ada Chamberlain, . . . Olathe.
Tiffany, (Mrs.) Carrie E., . . . . . Lawrence.
Tinder, Ray Harold, . . . . . Parsons.
Troup, Ronald, . . . . . Kansas City.
Trousdale, Lillian, . . . . . Newton.
Vandling, Vinnie, . . . . . Larned.
Virmond, Mary Elizabeth, . . . . Hays.
Walmer, Sadie, . . . . . Merriam.
Wellington, Waldo Forster, . . . . Ellsworth.
White, Sara, . . . . . Ada.
Whitney, James Edward, . . . . Scandia.
Wilber, (Mrs.) Flora S., . . . . . Lawrence.
Williams, Marie, . . . . . Newton.
Willis, Elliott James, . . . . . Conway Springs.
Withers, Raymond, . . . . . Valley Falls.
Wixson, Manley Joseph, . . . . . Vining.
Worline, Robert H., . . . . . Peabody.
Worrell, Bertram, . . . . . Holton.

Specials, 120.

## The School of Engineering.

### SENIORS.

| | |
|---|---|
| Adams, Ira James, | Perry. |
| Adams, Irwin D., | Caldwell. |
| Baldwin, G. Clyde, | *Kinsman, Ohio.* |
| Barton, Ray, | Lawrence. |
| Bedell, Frank G., | Iola. |
| Benson, Nels C., | Lawrence. |
| Black, Ernest Bateman, | Meade. |
| Blanpied, Dolph, | Leavenworth. |
| Breneman, Floyd, | Osawatomie. |
| Brett, Lawrence, | Lawrence. |
| Butler, J. Wilson, | Ottawa. |
| Cone, Victor, | Lawrence. |
| Dunmire, Herbert, | Lawrence. |
| Johnson, George DeForest, | Lawrence. |
| Kepner, Wilford, | Sabetha. |
| Leighty, William Jacob, | Tonganoxie. |
| Mann, Arthur R., | St. John. |
| Martin, John B., | Mound City. |
| McGillivray, Norman Macleod, | Kansas City. |
| McLauthlin, Alden, | *Denver, Colo.* |
| Neville, William, | Lawrence. |
| Parker, Glenn L., | Olathe. |
| Plake, Frank, | Chanute. |
| Reid, Claude, | Morrill. |
| Scheller, Carl, | Kansas City. |
| Seaver, Charles Homer, | Ellsworth. |
| Smethers, Albert Frederic, | Eureka. |
| Strickler, Thomas Johnson, | Topeka. |
| Wampler, Oliver, | *Webb City, Mo.* |
| Ward, Walter, | Belleville. |
| Whitney, Charles, | Girard. |
| Williams, Bruce, | Chanute. |
| Zimmerman, Oscar A., | Olathe. |

Seniors, 33.

### JUNIORS.

| | |
|---|---|
| Adams, D. Stanley, | *Kansas City, Mo.* |
| Ames, Loren, | Downs. |
| Anderson, Dan S., | Lawrence. |
| Bailey, Edgar Lawrence, | Lawrence. |

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|---|---|
| Barnes, Luther, | Lawrence. |
| Briggs, Lawrence Julian,* | Lawrence. |
| Bohn, Louis J., | Troy. |
| Boot, Cornelius William, | *Holland, Mich.* |
| Brock, Frank Peterson, | Girard. |
| Brown, Andrew R., | Scammon. |
| Busch, Harry, | *Kansas City, Mo.* |
| Cater, Don, | Lawrence. |
| Coleman, Bond, | Mound City. |
| Cook, Arthur T., | Onaga. |
| Davidson, J. Harry, | Burlington. |
| Forter, Samuel, | Marysville. |
| Fry, Vene, | Iola. |
| Gallup, Ralph Forney, | Blue Rapids. |
| Gowans, Harry Wilson, | Lawrence. |
| Greenfield, Benjamin, | Price. |
| Hackney, William, | Wellington. |
| Hanna, Harry L., | Lawrence. |
| Heine, John Farnsworth, | Fort Scott. |
| Hine, Charles Robinson, | Kinsley. |
| Hixson, Arthur Warren, | Hiawatha. |
| Holben, Marvin, | Norcatur. |
| Hopkins, G. Jay, | Garnett. |
| Klaumann, Charles, | Iola. |
| Lank, William John, | La Crosse. |
| Mackenzie, George Pierce, | Kansas City. |
| Myers, Ernest Lindley, | Hutchinson. |
| McConoughy, David Charles, | Atchison. |
| Neff, Paul J., | *Kansas City, Mo.* |
| Purton, Astley, | Minneapolis. |
| Rieman, Jonathan Burwell, | Meade. |
| Shuey, Paul F., | Emporia. |
| Shuey, Ralph, | Emporia. |
| Smith, Owen, | Independence. |
| Strode, Robert L., | Fort Scott. |
| Stuart, Walter Fuller, | Baldwin. |
| Sweezey, Roy, | Olivet. |
| Thorpe, Joel Rex, | Merriam. |
| Winning, Robert K., | *Kansas City, Mo.* |

Juniors, 43

* Deceased.

SOPHOMORES.

| | |
|---|---|
| Ahlborn, George, | Smith Center. |
| Arnold, Wesley, | Kansas City. |
| Ballinger, Carl, | Burlington. |
| Barnard, John, | Osawatomie. |
| Blackmar, Frank H., | *Kansas City, Mo.* |
| Bliss, Tulla Ethan, | Oskaloosa. |
| Boardman, Floyd, | Arkansas City. |
| Boynton, Charles Otis, | Kansas City. |
| Bozell, Harold Veatch, | *Kansas City, Mo.* |
| Bramwell, Glenn H., | Belleville. |
| Brentlinger, John, | Columbus. |
| Brigham, Clare, | Belleville. |
| Broderson, Harry Peter, | Lyndon. |
| Burkholder, Joseph L., | Harper. |
| Burt, Clarence Leslie, | Greensburg. |
| Campbell, Earl, | Kansas City. |
| Chapin, Charles Walter, | Council Grove. |
| Collins, Arthur Lee, | Topeka. |
| Copley, Everett, | *Kansas City, Mo.* |
| Corp, Clifford, | Hutchinson. |
| Cortelyou, Frank Morgan, | Muscotah. |
| Coston, Alfred Taylor, | Fort Scott. |
| Courtney, Fletcher Delos, | Lawrence. |
| Coventry, Neil Sherman, | Fort Scott. |
| Crotinger, William, | Bison. |
| Donald, Prentiss Charles, | La Harpe. |
| Dove, Frank, | Chanute. |
| Drummond, Guy, | *Darlington, Okla.* |
| Duncan, John, | Belleville. |
| Elledge, Harvey Gerald, | McCune. |
| Ellis, Gwynne Wallace, | Pratt. |
| Farnsworth, Howard Richards, | Atchison. |
| Feagles, Ralph Levi, | Buffalo. |
| Forter, Cecil Alfred, | Marysville. |
| Freiburghouse, Edward, | Hiawatha. |
| Gelwix, Edmund, | Thayer. |
| Groene, Merle Carlisle, | Kansas City. |
| Groesbeck, Arthur Jerome, | Blue Rapids. |
| Guy, Frank Lauer, | Topeka. |
| Hambleton, Thomas, | Herington. |
| Hatashita, Cheoichiri, | *Tahara, Japan.* |
| Henderson, William Simpson, | Leavenworth. |

Hess, John A., . . . . . Halstead.
Heter, Wylie, . . . . . Sterling.
Hicks, Van Trott, . . . . . Junction City.
Huddleston, Early, . . . . . Lawrence.
Hunter, Homer, . . . . . Mitchell.
Johnson, Fred Rudolph, . . . . . Salina.
Kaler, John E., . . . . . Lawrence.
Kent, Robert, . . . . . Lawrence.
Lander, Albert, . . . . . Lawrence.
Lee, Benedict, . . . . . Hutchinson.
Lee, J. Herbert, . . . . . Ness City.
Linton, William M., . . . . . Lawrence.
Luther, Herbert Lawrence, . . . . Lawrence.
Manning, Robert Guy, . . . . . Gypsum.
Miller, Henry H., . . . . . Fort Scott.
Miller, Vanroy W., . . . . . Lawrence.
Morgan, Carl, . . . . . De Soto.
Morrow, Cyrus, . . . . . Blue Rapids.
Murray, Roy, . . . . . Olathe.
McGeorge, William Thomas, . . . . Argentine.
McShane, Jesse J., . . . . . Gardner.
Noel, Elmer, . . . . . Pittsburg.
Orr, Robert, . . . . . Winfield.
Palmer, Sidney L., . . . . . Burdett.
Parker, Frank Everett, . . . . . *Kansas City, Mo.*
Pulliam, Leonard, . . . . . Lyons.
Rankin, Herbert William, . . . . . *Albuquerque, N. M.*
Reed, Howard Casper, . . . . . Kansas City.
Ridnour, Roy Everett, . . . . . Emporia.
Rouse, Carl Everett, . . . . . Beloit.
Russell, Lloyd, . . . . . Lawrence.
Servey, Don Fulton, . . . . . Iola.
Sigler, Elmer, . . . . . Kansas City.
Simpson, Roy Livingston, . . . . . Clay Center.
Sippy, Walter, . . . . . Belle Plaine.
Smith, Harris B., . . . . . Lawrence.
Stewart, Ross R., . . . . . *Kansas City, Mo.*
Thiele, Ernest J., . . . . . Washington.
Thomas, Jay David, . . . . . Argentine.
Tredick, George Chester, . . . . . Kingman.
Tripp, Ray Gifford, . . . . . Herington.
Trowbridge, Carl Boyd, . . . . . Argentine.
Tufts, John Marshall, . . . . . Atchison.

Vaughn, Wilton Arthur, . . . . . Marion.
Weith, Archie James, . . . . . Iola.
Wellington, Earl J., . . . . . Salina.
Welsh, Charles Robert, . . . . . Clifton.
Wolcott, Walter, . . . . . Lawrence.
Woodbury, Richard Lincoln, . . . . Lawrence.
Woodruff, James Anson, . . . . . Clyde.
Young, Benjamin Percy, . . . . . Kansas City.

Sophomores, 93.

## FRESHMEN.

Abercrombie, Carl William, . . . . Wichita.
Ahlborn, Karl, . . . . . Smith Center.
Ainsworth, Samuel, . . . . . Lyons.
Allen, William Curtis, . . . . . Wichita.
Apollo, Otto, . . . . . Fredonia.
Armsby, Lauren, . . . . . Council Grove.
Arthur, Frank Caddan, . . . . . Galena.
Bacon, John, . . . . . Emporia.
Ball, Carl Milton, . . . . . Iola.
Balocca, Fred, . . . . . Osage City.
Banker, Julian, . . . . . Lawrence.
Bergen, Ralph Howell, . . . . . Wichita.
Berry, Nathaniel Eichorn, . . . . Waterville.
Best, Elden, . . . . . Columbus.
Bigelow, Roy, . . . . . Lawrence.
Bohnstengel, Walter, . . . . . Dodge City.
Bowser, Cleveland, . . . . . Columbus.
Boyle, Carl Sherwin, . . . . . Emporia.
Buck, James Wallace, . . . . . Wichita.
Buckner, Dean, . . . . . Topeka.
Bullen, Leslie Marr, . . . . . *Pueblo, Colo.*
Busby, Roy Cleveland, . . . . . *South McAlester, I. T.*
Card, Benjamin A., . . . . . Scott.
Casebier, S. Ernest, . . . . . McLouth.
Cayot, Claude E., . . . . . Garnett.
Chalkley, Harold W., . . . . . Lawrence.
Chaney, Oscar Lamott, . . . . Wichita.
Chapman, Charles Sumnern, . . . . Pittsburg.
Chesky, Victor Ernest, . . . . . Nickerson.
Clugston, John, . . . . . Topeka.
Coleman, Harry Shipp, . . . . . Garnett.
Coulter, Edwin, . . . . . Pittsburg.
Craig, Clarence, . . . . . *Joplin, Mo.*

Crane, Russell Henry, . . . . . Wamego.
Crummer, Fred, . . . . . Belleville.
Dahlene, Oscar, . . . . . Lawrence.
Daniels, William Henry, . . . . . Seneca.
Dassler, J. Carl, . . . . . Leavenworth.
Day, Lloyd, . . . . . Lawrence.
Day, Wilder Frank, . . . . . Lost Springs.
DeBerry, James Lowe, . . . . . Paola.
Dodd, Firth Marion, . . . . . White Cloud.
Dodge, Allan Wayne, . . . . . Salina.
Dolman, Samuel Grove, . . . . . Topeka.
Dougherty, James Wilfred, . . . . . Cawker City.
Drennan, Carl Mac, . . . . . Arkansas City.
Dudley, Chandler, . . . . . Independence.
Dunbar, Benjamin Harmon, . . . . . Jefferson.
Edgerton, Oliver Paul, . . . . . Randolph.
Edie, Albert Theodore, . . . . . Lawrence.
Edmonds, Walter Ernest, . . . . . Lawrence.
Edmonds, Warren Oliver, . . . . . Lawrence.
Emmitt, William Edwin, . . . . . Lawrence.
English, Arthur, . . . . . Hiawatha.
Evans, John Corbly, . . . . . Lawrence.
Fein, George Washington, . . . . . Halstead.
Fischer, Ernest, . . . . . Leavenworth.
Fisher, Charles Robert, . . . . . Pittsburg.
Fogwell, Harrison Harry, . . . . . Topeka.
Foster, Harold William, . . . . . Lawrence.
Frichot, Bert Charles, . . . . . Leavenworth.
Fuhrman, Theodore Albert, . . . . . Wathena.
Gates, Cecil Horatio, jr., . . . . . Rosedale.
Geiger, Edward W., . . . . . Leavenworth.
Gill, John Edwin, . . . . . Clyde.
Glaze, Frank Wyant, . . . . . Lyons.
Goudy, Harry Willard, . . . . . Beloit.
Gowenlock, Thomas R., . . . . . Clay Center.
Griffin, Wylie Reed, . . . . . Ellis.
Griggs, Frank Wellington, . . . . . Topeka.
Hall, Earl, . . . . . Horton.
Hanna, Dallas, . . . . . Lawrence.
Harbison, Frank Addison, . . . . . *Greenwood, Mo.*
Harvey, Leslie J., . . . . . Salina.
Haskins, Arthur Charles, . . . . . Kingman.
Hausman, Isaac, . . . . . Marysville.

Hennessy, Benedict, . . . . . Fulton.
Hesser, Fred Reeder, . . . . . Beloit.
Hoar, Charles Park, . . . . . Lawrence.
Hoffman, Aloysius Marcell, . . . . Parsons.
Hopkins, John Emmett, . . . . . Garden City.
Horton, Clyde, . . . . . Sterling.
Houghton, Albin Jonas, . . . . . Cottonwood Falls.
Jennings, Earl Willis, . . . . . Clay Center.
Johnson, Charles Edward, . . . . Lawrence.
Johnson, Fred Eugene, . . . . . Lawrence.
Johnson, Thomas William, . . . . Lawrence.
Johntz, Albert Frederick, . . . . Abilene.
Johntz, Harry, . . . . . Abilene.
Jones, Ray, . . . . . Leavenworth.
Kackley, Walter John, . . . . . Parsons.
Katsuno, Sadaharu, . . . . . *Tokio, Japan.*
Keach, Augustus Frederick, . . . . Lawrence.
Kenny, William Dennis, . . . . . Scammon.
Kiddoo, Will E., . . . . . Cedar Point.
Kilian, Karl Walter, . . . . . Junction City.
King, Thomas Phillips, . . . . . Minneapolis.
Kingsbury, William Frank, . . . . Lawrence.
Kirk, Walter Alex, . . . . . Leavenworth.
Knepp, William Henry, . . . . . *Kansas City, Mo.*
Knowlton, William J., . . . . . Iola.
Lafferty, George W., . . . . . Ellsworth.
Lindsey, James David, . . . . . Osawatomie.
Liston, Roy, . . . . . Altamont.
Loper, Cleveland, . . . . . Norcatur.
Lusk, Charles Winslow, . . . . . Galena.
Lynch, Frank Curtis, . . . . . Cherryvale.
Magee, Harry Lyle, . . . . . Blue Mound.
Mann, George Spencer, . . . . . Rosedale.
Marshall, George Truesdell, . . . . Concordia.
Martin, Edwin Roy, . . . . . Rosedale.
Mead, Forrest Dearborn, . . . . . Beloit.
Merwin, John Milton, . . . . . Lawrence.
Moore, Vernon Clyde, . . . . . Blue Mound.
Morgan, John Francis, . . . . . Sylvan Grove.
Morris, Glen, . . . . . Eureka.
McClure, Harry Clifford, . . . . . Cawker City.
McClurg, John Guy, . . . . . Valley Falls.
McCoy, Curtis J., . . . . . Hiawatha.

McCreary, Miller, . . . . . Leavenworth.
McCully, Harry Hemphill, . . . . Broughton.
McCune, Harry Dale, . . . . . Leavenworth.
McCune, George Addison, . . . . Leavenworth.
McLenon, Alexander, . . . . . Effingham.
Nachtman, Frank Xavier, . . . . Junction City.
Nevinger, Daniel, . . . . . Columbus.
Nicol, David, . . . . . Carbondale.
Nixon, Henry Lee, . . . . . *Kansas City, Mo.*
Oldroyd, Harry, . . . . . Arkansas City.
Palmer, Claude Edwin, . . . . . Osawatomie.
Parker, Howard, . . . . . Lawrence.
Parmelee, Paul Ross, . . . . . Topeka.
Peet, William Joseph, . . . . . *Kansas City, Mo.*
Perkins, Clement Dudley, . . . . Lawrence.
Perkins, David, . . . . . Lawrence.
Perrill, Ralph Crawford, . . . . . Solomon.
Phillips, Walter Benson, . . . . . Gardner.
Pierce, Frederick Charles, . . . . Marysville,
Pleasant, Carl, . . . . . Lyndon.
Ponsler, Roscoe, . . . . . Iola.
Pratt, Fred Cameron, . . . . . *Webb City, Mo.*
Pratt, Wallace, . . . . . Phillipsburg.
Priest, Richard Newton, . . . . . Chanute.
Ramsey, Terrence Eugene, . . . . Tonganoxie.
Randall, Howard Mansfield, . . . . Newton.
Reece, Clyde, . . . . . Topeka.
Renner, Edgar Ivan, . . . . . Mound Valley.
Reuter, William Gottlieb, . . . . . Topeka.
Riste, Roy Baringer, . . . . . Norton.
Robinson, Sylvester, . . . . . Topeka.
Rose, Harry J., . . . . . Atchison.
Ross, Thomas Cornelius, . . . . . Olathe.
Rowlands, Robert John, . . . . . Lawrence.
Russell, Claud, . . . . . Independence.
Russell, Earl Paul, . . . . . Paola.
Rutherford, Chester Cory, . . . . Leavenworth.
Schnacke, Austin Davis, . . . . . McPherson.
Shearer, Roscoe Huston, . . . . . Minneola.
Shefler, Clinton Max, . . . . . Linwood.
Shields, William Glenn, . . . . . Wichita.
Singleton, Rex B., . . . . . Benedict.
Skofstad, Martin Ernest, . . . . . Lawrence.

| | |
|---|---|
| Souder, James Byron, | Newton. |
| Stanley, Lloyd Lawrence, | Lawrence. |
| Steen, R. Ford, | Wellsville. |
| Stegeman, Amel, | Hope. |
| von Stein, Louis Raymond, | Lawrence. |
| Stoker, Arthur Andrews, | Morrowville. |
| Taylor, Harry James, | Larned. |
| Thiele, William Fred, | Hanover. |
| Turner, Francis Marion, | Clifton. |
| Veatch, N. Thomas, | Atchison. |
| Walker, Roy Melvin, | Sabetha. |
| Wampler, Clarence, | *Webb City, Mo.* |
| Waring, Clarence, | Abilene. |
| Waring, Horace, | Marion. |
| Wayman, Lee William, | Emporia. |
| Wheeler, Charles M., | Lawrence. |
| Wheeler, Wilfred Forest, | Argentine. |
| Wilder, William Jonas, | Salina. |
| Winter, Fred Hill, | Lecompton. |
| Wixson, Manley Joseph, | Vining. |
| Wright, Cecil, | White Cloud. |

Freshmen, 182.

SPECIALS.

| | |
|---|---|
| Brownlee, Oscar, | Lawrence. |
| Burt, Byron, | Garnett. |
| Chronister, Hubert D., | Abilene. |
| Erbacher, August Francis, | St. Marys. |
| Harvey, Fred, | Parsons. |
| Logan, Spencer R., | Cherryvale. |
| Morse, Orlin Raymond, | Mound City. |
| Nelson, Bernhard Richard, | Lawrence. |
| Nelson, Phillip Theodore, | Lindsborg. |
| Nottingham, Avon R., | Lawrence. |
| Noyes, (Mrs.) Bertha, | Lawrence. |
| Noyes, Edward N., | Lawrence. |
| Pringle, Merle Blaine, | Lawrence. |
| Reese, William Johnson, | Holton. |
| Reynolds, Archie Love, | *Jefferson City, Mo.* |
| Romig, Benjamin, | Ottawa. |
| Scott, J. Le Roy, | Parsons. |
| Simon, Edmond, | *Kansas City, Mo.* |

Specials, 18.

UNCLASSED.

| | |
|---|---|
| Blades, James, | Minneapolis. |
| Fuller, Adelbert Forrest, | Argentine. |
| Holcomb, Myron J., | Topeka. |
| Lednicky, Victor Englebert, | Everest. |
| Millikin, Perry March, | Galena. |
| Morgan, Silas, | Coffeyville. |
| Rooney, Chester C., | Fairview. |
| Thomas, Robert William, | Topeka. |
| Truesdell, George Homer, | *Kingfisher, Okla.* |
| Wagenknecht, Harry, | Wathena. |

Unclassed, 10.

## The School of Fine Arts.

### GRADUATES.

| | |
|---|---|
| Bell, Mrs. Olin, | Lawrence. |
| Farrell, Mrs. Joseph, | *Kansas City, Mo.* |
| Greissinger, Harriet, | Lawrence. |
| Hubach, Mrs. C. E., | Lawrence. |
| Leonard, Alice, | Lawrence. |
| Nungesser, Ella, | Lawrence. |
| Wiedemann, Louise, | Lawrence. |

Graduates, 7.

### SENIORS.

| | |
|---|---|
| Clark, Carlotta, | Sharon Springs. |
| Gilson, Helen Louise, | Lawrence. |
| Maser, Pearl Bechtel, | Parsons. |
| McKoin, Mabel, | Olathe. |
| Rose, Myrtle, | Ionia. |
| Sweeney, Anna Louise, | Lawrence. |
| Taylor, Alice Maude, | Lawrence. |

Seniors, 7.

### JUNIORS.

| | |
|---|---|
| Baumann, Helen, | Neodesha. |
| Bonar, Kathryn, | Lawrence. |
| Cross, Viah Mae, | Johnson. |
| Cullers, Gertrude Estelle, | Scandia. |
| Fitch, Louise, | Lawrence. |
| Hodgson, Charlotte M., | Lawrence. |
| Ingleman, Anna, | Lawrence. |
| McNaughton, Lucile, | Tonganoxie. |
| Perkins, Margaret Louise, | Lawrence. |
| Street, M. Hortense, | Lawrence. |

Juniors, 10.

### SOPHOMORES.

| | |
|---|---|
| Arbuthnot, Lulu, | Belleville. |
| Balsley, Helen, | Oskaloosa. |
| Bowden, Bessie, | Lawrence. |
| Branch, Hazel Elizabeth, | Wichita. |
| Butler, Eva Annette, | Lawrence. |
| Clevenger, Elda Babbett, | Lawrence. |
| Dickinson, Samuel Trig, | Lawrence. |

Dinsmoor, Frances, . . . . . Lawrence.
Fluke, Berneice Estelle, . . . . . Lawrence.
Garvin, Daisy D., . . . . . Lawrence.
Gebhart, Henrietta, . . . . . Phillipsburg.
Houlton, Frances, . . . . . Lawrence.
Ise, John Christopher, . . . . . Downs.
Miller, Grace LaVera, . . . . . El Dorado.
Roff, Juliette, . . . . . Newton.

Sophomores, 15.

FRESHMEN.

Allen, Lloyd Ellsworth, . . . . . Galena.
Anderson, Charlotte L., . . . . . Chetopa.
Betts, Sibyl D., . . . . . Kansas City.
Casebeer, Wilma Ellison, . . . . . Independence.
Clark, Maude Lucile, . . . . . Fredonia.
Cleland, Sadie A., . . . . . Lawrence.
Eggleston, Bessie LeBaron, . . . . . Pratt.
Ellis, Pearl, . . . . . El Dorado.
Farmer, Georgia, . . . . . Lawrence.
Garrett, Mayme Adelaide, . . . . . Lawrence.
Graves, Nellie Marjorie, . . . . . Beloit.
Hart, Alice, . . . . . Beloit.
Hester, Nina May, . . . . . Lawrence.
Kennedy, Madge, . . . . . Fredonia.
Kilworth, Bertha Bell, . . . . . Lawrence.
Krone, Lucile E., . . . . . Independence.
Pickering, Harold, . . . . . Olathe.
Reynolds, Kate, . . . . . Clay Center.
Scott, Pearl Jeannette, . . . . . *Kansas City, Mo.*
Shaler, Ethel Sarah, . . . . . Lawrence.
Shryock, Frances, . . . . . *Kansas City, Mo.*
Stephens, Elizabeth, . . . . . Lawrence.
Trousdale, Lillian, . . . . . Newton.
Warner, Grace, . . . . . Garden City.
Weidlein, Verna M., . . . . . Augusta.
Willis, Susie Emily, . . . . . Lawrence.

Freshman, 26.

SPECIALS.

Adams, Jane Elizabeth, . . . . . *Clifton, Ariz.*
Alford, Katherine Sylvia, . . . . . Lawrence.
Alford, Sylvia, . . . . . Lawrence.
Anderson, Pansy, . . . . . Lawrence.
Asher, Henry H., . . . . . Lawrence.
Beckwith, Abbey, . . . . . Hiawatha.

| | |
|---|---|
| Bell, Bonnie, | Lawrence. |
| Bernhard, Lillie, | Lawrence. |
| Bernhard, Rillie, | Lawrence. |
| Bowen, Claire Margaret, | Lawrence. |
| Caldwell, Kate, | Lawrence. |
| Cone, Margaret, | Lawrence. |
| Cooke, Maude B., | Lawrence. |
| Craig, Ethel, | Meade. |
| Dalton, Mrs. J. B., | Lawrence. |
| Dennis, Florence B., | Lawrence. |
| Doubleday, Caroline, | Lawrence. |
| Eames, Lola, | Lawrence. |
| Eddy, Bertha E., | Lawrence. |
| Eberly, Mona Newton, | Lawrence. |
| Ellsworth, Sheila H., | Lyons. |
| Faragher, Paul Vance, | Sabetha. |
| Fitzpatrick, Jennie, | Lawrence. |
| Folks, Mrs. Willis K., | Lawrence. |
| Ford, Thomas Bartlett, | Lawrence. |
| Fox, Shirley, | Lawrence. |
| Gant, Susanna, | Lawrence. |
| Gill, Ruth, | Lawrence. |
| Garrett, Clyda, | Lawrence. |
| Gilmore, Gertrude, | Lawrence. |
| Greenlees, Agnes, | Lawrence. |
| Griesa, Edna, | Lawrence. |
| Gufler, Augusta, | Lawrence. |
| Harshberger, Audrey, | Lawrence. |
| Healey, Florence, | Lawrence. |
| Heizer, Florence Mabelle, | Osage City. |
| Henderson, Mrs. T. F., | Lawrence. |
| Hendrix, Nellie, | Lawrence. |
| Hiatt, Ila Patti, | Lawrence. |
| Hill, John, | Lawrence. |
| Holt, Roxie Mabel, | Highland. |
| Hoskins, Roy, | Lawrence. |
| Hunzicker, Lena, | Lawrence. |
| Ingram, Estella Inez, | Lawrence. |
| Johnson, Anna M., | McPherson. |
| Kalin, Oscar, | Clay Center. |
| Kent, Mrs. Grace, | Burlington. |
| Kunkel, Bessie, | Lawrence. |
| Lawson, Irma, | Independence. |
| Leddy, Margaret, | Conway Springs. |

Lindsey, James David, . . . . . Osawatomie.
Livers, Ada Elizabeth, . . . . . Ionia.
Marks, Adele, . . . . . Lawrence.
Maxson, Myrtle, . . . . . La Harpe.
Merstetter, Amy, . . . . . Kansas City.
Miller, Mattie, . . . . . Lawrence.
Mitchell, Hannah, . . . . . Lawrence.
Morehart, Hortense, . . . . . Chanute.
Morin, Zerelda Sue, . . . . . Lawrence.
Moore, Georgia Edna, . . . . . Wa Keeney.
Murray, Roy, . . . . . Olathe.
Myers, Martha F., . . . . . Lawrence.
Morrow, Ethel Cory, . . . . . Lawrence.
McCracken, Myra Louise, . . . . . Leavenworth.
McLaughlin, Myrtle V., . . . . . Bronson.
Neff, Eleanor Alice, . . . . . Kansas City.
Organ, Mrs. Frank, . . . . . Howard.
Padfield, Jessie Claire, . . . . . Hutchinson.
Page, Willard James, . . . . . Whiting.
Parrish, Josephine, . . . . . Lawrence.
Passon, Rebecca, . . . . . Lawrence.
Peak, Lulu M., . . . . . Lawrence.
Perkins, Helen Marguerite, . . . . *Cleveland, Ohio.*
Phillips, Sylvia, . . . . . *Kansas City, Mo.*
Pingry, Mrs. C. O., . . . . . Lawrence.
Pixley, Marie Louise, . . . . . *Portsmouth, Ohio.*
Riling, Margaret, . . . . . Lawrence.
Robinson, Wilma, . . . . . Lawrence.
Roberts, Anne, . . . . . Lawrence.
Ross, Richard A., . . . . . St. Marys.
Schleifer, Zana, . . . . . Lawrence.
Schneider, Caroline Louise, . . . . Lawrence.
Sellards, Minnie Mae, . . . . . Lawrence.
Shaffer, Susie Grace, . . . . . Hays.
Smith, Florence E., . . . . . Grainfield.
Smith, Frank Allen, . . . . . Lawrence.
Sparr, Helen Mary, . . . . . Lawrence.
Spray, Lester, . . . . . Lawrence.
Spray, Ruth, . . . . . Lawrence.
Sterling, Genevieve, . . . . . Lawrence.
Stichter, Charl, . . . . . Lawrence.
Stout, Blythe, . . . . . Lawrence.
Tinder, Ray Harold, . . . . . Parsons.

Tusten, Elizabeth, . . . . . Lawrence.
Uhrlaub, Agnes, . . . . . Lawrence.
Unthanks, Georgia, . . . . . Lawrence.
Washburn, Edetha, . . . . . Ottawa.
Weatherby, Le Roy S., . . . . . Lawrence.
Weitzenkorn, Dora, . . . . . Lawrence.
Wilber, Margaret Hinkle, . . . . . Lawrence.
Willis, Edith, . . . . . Lawrence.
Zurcher, Rose, . . . . . Newton.

Specials, 102.

## The School of Law.

SENIORS.

| | |
|---|---|
| Benson, George J., | El Dorado. |
| Blood, John Winter, | Toronto. |
| Briley, Otto J., | Chanute. |
| Cleland, Sadie, | Lawrence. |
| Cook, Perry C., | Gove City. |
| Cureton, Luther W., | Lawrence. |
| Disney, Ernest, | Independence. |
| Driscoll, Jeremiah E., | Wilson. |
| Elder, Willam Henry, | Burrton. |
| Finkle, Ellsworth Weaver, | Galva. |
| Ford, S. Clarence, | Garden City. |
| Heard, Walter L., | Arkansas City. |
| McCormick, Ross Clinton, | Phillipsburg. |
| McNaughton, Malcolm, | Tonganoxie. |
| Naill, John A., | Herington. |
| Organ, Frank, | Lawrence. |
| Parker, Wilbern, | Emporia. |
| Perry, Frederick Francis, | Kiowa. |
| Pingry, C. Oscar, | Pittsburg. |
| Pooler, Arthur, | Beloit. |
| Popham, Emerson, | Minneapolis. |
| Relihan, Arthur, | Smith Center. |
| Roaten, John, | *Oklahoma City, Okla.* |
| Roberts, Clarence, | Lawrence. |
| Sedgwick, Fred, | Parsons. |
| Simpson, Oscar, | *Hobart, Okla.* |
| Staker, Ray Montgomery, | Wichita. |
| Stichter, Charles, | *Pleasant Hill, Ohio.* |
| Sutton, Joseph Henry, | Harris. |
| Thorne, John R., | Olathe. |
| Vaughn, Charles M., jr., | Marion. |
| Ward, Nelson J., | Belleville. |
| Wilson, Wallis D., | Horton. |
| Winnagle, Roscoe, | *Warren, Ohio.* |

Seniors, 34.

MIDDLES.

| | |
|---|---|
| Adams, Clyde, | Topeka. |
| Alexander, Summerfield Still, | Medicine Lodge. |
| Atkinson, Clarence K., | Arkansas City. |
| Bailey, Clare A., | Mankato. |
| Bloss, Alva Lee, | Clay Center. |
| Breidenthal, Herbert, | Kansas City. |
| Brett, John Fred, | Iola. |
| Brookens, Elgie Clifford, | Harlan. |
| Burlingame, Lafayette, | Seward. |
| Campbell, Newton, | Lawrence. |
| Detrick, Erve Orion, | Erie. |
| Dunn, Fred S., | Garden City. |
| Guernsey, George Thacher, jr., | Independence. |
| Henley, Warren, | Lawrence. |
| Hetherington, Hale, | Atchison. |
| Johnson, Nelson E., | Kansas City. |
| Kimball, Paul H., | Parsons. |
| Lebrecht, Hal R., | *Kansas City, Mo.* |
| Luckey, William J., | Greenleaf. |
| Merrill, Frank J., | Paola. |
| Montgomery, William, | Topeka. |
| McCartney, Herbert M., | Neodesha. |
| McDonald, Walter Edward, | Kansas City. |
| McVey, Walter, | Independence. |
| Nevitt, Oak Dale, | Oxford. |
| Orr, George Glick, | Atchison. |
| Powell, Charles, | Wichita. |
| Richardson, Jay H., | *St. Joseph, Mo.* |
| Smith, D. Glick, | Girard. |
| Smith, Solon, | Stockton. |
| Souders, Clyde E., | Cheney. |
| Spencer, Clifton Allen, | Russell Springs. |
| Taylor, Thomas Chalmers, jr., | Lawrence. |
| Varney, Herbert Hadden, | Kansas City. |
| White, Jesse Ruskin, | Mankato. |
| Wildman, Roy Taylor, | Lawrence. |

Middles, 36.

JUNIORS.

| | |
|---|---|
| Albertson, Fred Stubbs, | Kansas City. |
| Allen, Forrest Clare, | *Independence, Mo.* |
| Beach, Albert Isaac, | Olathe. |
| Blackmar, Charles Maxwell, | *Kansas City, Mo.* |

Boyd, Lauron B., . . . . . Larned.
Browning, Ross, . . . . . Chanute.
Carlisle, John, . . . . . Clay Center.
Cohn, Julius, . . . . . Fort Scott.
Combs, Pryor, . . . . . Kansas City.
Cook, Calvin George, . . . . . Lorraine.
Coulter, Edwin, . . . . . Pittsburg.
Countryman, Thomas Franklin, . . . Wa Keeney.
Cox, Roy Arminius, . . . . . Augusta.
Craig, Clarence, . . . . . *Joplin, Mo.*
Dennis, Clarence Glenn, . . . . . Seneca.
DeVasher, Roy, . . . . . *Kansas City, Mo.*
Douglas, William, . . . . . Cherryvale.
Earhart, Birdsey A., . . . . . Oxford.
Eaton, Hyden J., . . . . . Kansas City.
Eddy, William Edward, . . . . . Abilene.
Eiler, Everett, . . . . . Oberlin.
Fitzgerald, John Patrick, . . . . . Burden.
Gander, Gilbert M., . . . . . Baldwin.
Gaskill, Harry Andrew, . . . . . Ottawa.
Goldman, Heim, . . . . . Kansas City.
Grant, Eugene Winfield, . . . . . Emporia.
Gunn, William Rice, . . . . . Fort Scott.
Gurley, Alexander Henry, . . . . . Barnard.
Hartley, Oscar B., . . . . . Lyndon.
Hoefer, Oscar H., . . . . . *Higginsville, Mo.*
Howell, David J., jr., . . . . . *Maryville, Mo.*
Hunt, Roscoe Frank, . . . . . Independence.
Johnson, Carlos, . . . . . Arkansas City.
Jones, Hugh, . . . . . Chanute.
Jones, John Paul, . . . . . Kansas City.
Justice, Clair Lee, . . . . . Chanute.
Kirmayer, Carl, . . . . . Leavenworth.
Lamb, Arnott Ray, . . . . . Yates Center.
Landon, Alfred M., . . . . . Independence.
Little, Clarence, . . . . . Carbondale.
Lomax, Sullivan, . . . . . Independence.
Martin, Charles Irving, . . . . . Fort Scott.
Martin, Fred Oscar, . . . . . Altamont.
Martin, (Mrs.) Ida, . . . . . Fort Scott.
Maser, George Lewis, . . . . . Parsons.
Matthews, Wesley I., . . . . . Fredonia.
Moore, Louis Howell, . . . . . Fort Scott.

| | |
|---|---|
| O'Brien, Oscar Lawrence, | Independence. |
| Randall, Harry, | Salina. |
| Souders, Otto, | Cheney. |
| Spangler, Adolph James, | Lawrence. |
| Stryker, Jacob Lowe, | Fredonia. |
| Sullivan, Albert M., | Louisville. |
| Tinder, Ray Harold, | Parsons. |
| Wall, Paul Jean, | Wichita. |
| Wallace, Clyde Austin, | *Ponca City, Okla.* |
| Walmer, Sadie, | Merriam. |

Juniors, 57.

SPECIALS.

| | |
|---|---|
| Broadie, Wilber Esting, | Winfield. |
| Brown, John William, | Neodesha. |
| Canty, Miles E., | Buffalo. |
| Davis, Charles Henry, | Marysville. |
| Jones, Walter Fred, | Hutchinson. |
| McWilliams, Samuel James, | Fort Scott. |
| Parsons, John Robert, | Collyer. |
| Sheedy, Dennis J., | Fredonia. |
| Swan, Theodore Asa, | Pittsburg. |
| Thomas, Robert William, | *Geary, Okla.* |
| Worline, Robert Hite, | Peabody. |
| Worrell, Bertram Talkington, | Holton. |

Specials, 12.

## The School of Pharmacy.

### SENIORS.

| | |
|---|---|
| Chapin, Frank Eugene, | Minneapolis. |
| Dennis, Warren, | Stockton. |
| Drisko, Judah, | Abilene. |
| Garver, Clarabel, | Humboldt. |
| Hayden, Frank, | *Ponca City, Okla.* |
| Hill, Glenn, | Ottawa. |
| Ingalls, Maurice S., jr., | Halstead. |
| Joslyn, Frank K., | Cheney. |
| Mosher, Ida, | Kinsley. |
| Nieman, William Hugo, | Lawrence. |
| Riley, Roy Marland, | Wichita. |
| Springer, Homer M., | Leavenworth. |
| Swann, Mamie, | Basehor. |
| Terrass, Jacob Fred, | Alma. |
| Walkenwitz, Charles Louis, | Leavenworth. |
| Yates, Ora, | Narka. |

Seniors, 16.

### JUNIORS.

| | |
|---|---|
| Allen, David Leigham, | Princeton. |
| Bennett, Thomas Le Roy, | Weir. |
| Brown, Edward Roy, | Duquoin. |
| Brown, Ray Samuel, | Pomona. |
| Carothers, Earl, | Hiawatha. |
| Dowis, Albert J., | Lawrence. |
| Elliott, James William, | Emporia. |
| Epps, Walter Robert, | Pleasanton. |
| Forester, Forest, | Wa Keeney. |
| Gaut, Edward Albert, | St. John. |
| Gleissner, Paul Northcraft, | Abilene. |
| Green, Frederick, | Atchison. |
| Houston, William Henry, | Topeka. |
| Kemp, Walter Dewitt, | Lawrence. |
| Lee, Bernard, | Hutchinson. |
| Middlekauff, Casper, | Hays. |
| Mills, Harry James, | Osborne. |
| Moore, Claude, | Delphos. |
| McKinley, Albert, | Greensburg. |
| McNelley, Charles Earl, | Paola. |

| | |
|---|---|
| Names, Violet Marguerite, | Hoisington. |
| Overman, Chauncey Irving, | Lawrence. |
| Pedroja, Charles, | Hamilton. |
| Richardson, Evan Hart, | Havensville. |
| Riddell, Hugh, | McPherson. |
| Ross, George Edgar, | Troy. |
| Smith, Lute, | Topeka. |
| Stahl, Mary Catherine, | Norton. |
| Teeter, Lawrence, | Lawrence. |
| Tully, William Lee, | Burlington. |
| Urban, James Charles, | *Kingfisher, Okla.* |
| Wedel, Fred William, | Moundridge. |
| Wiedemann, Paul Anthony, | Alma. |
| Womer, Retta, | Bellaire. |
| Zeman, Dell Frank, | Wilson. |

Juniors, 35.

## SOPHOMORES.

| | |
|---|---|
| Bixby, Louis Edmund, | McPherson. |
| Evans, Arthur, | Williamstown. |
| Frey, Karl, | *Las Animas, Colo.* |
| Harvell, William, | Independence. |
| Jennings, Edward Bernice, | Kansas City. |
| Lottridge, Charles, | Pratt. |
| Williams, Kate, | Lawrence. |

Sophomores, 7.

## SPECIALS.

| | |
|---|---|
| Brenker, Emil Dick, | Bern. |
| Darrough, Mark Everett, | Emporia. |
| Leach, Henry Bennett, | Alton. |
| Lesley, William Amos, | Culver. |
| Minnehan, Edward Francis, | Summerfield. |
| Vliet, Richard Marion, | Walnut. |

Specials, 6.

## The School of Medicine.

### POSTGRADUATES.

| | |
|---|---|
| Bailey, W. F., M. D., | *Purdy, Mo.* |
| Owens, Francis Marion, M. D., | Argonia. |
| Scott, Ida Moxom, M. D., | Garnett. |
| Scott, John Rutherford, M. D., | Garnett. |

Postgraduates, 4.

### FOURTH YEAR.

| | |
|---|---|
| Acheson, Frederick Ira, | Kansas City. |
| Armstrong, Minard J., | *Brighton, Mo.* |
| Avery, Melvia Fairetta, | Wakefield. |
| Baldwin, Jesse Hayes, B. S., | Ada. |
| Bantleon, Verne Henry, | Kansas City. |
| Berry, Frederick Raymond, Ph. G., | *Kansas City, Mo.* |
| Booth, William Earle, | *Sickles, Okla.* |
| Border, Charles Theodore, | *Kansas City, Mo.* |
| Button, Edwin Clarence, | Great Bend. |
| Casburn, Alfred Leslie, | *Farris, Ill.* |
| Casburn, Frank Estell, | Mayfield. |
| Chandler, Frank, | Burden. |
| Coffey, Richard Nightingale, | *Kansas City, Mo.* |
| Crabb, John Adam, | Topeka. |
| Crampton, Joseph Hamilton, | *Colfax, Wash.* |
| Curtis, Mildred, | Neosho Falls. |
| Davies, John Dewi, | Concordia. |
| Davis, Edgar L., | Seneca. |
| Davis, Joseph William, | Independence. |
| Denslow, Frank McDonald, | *Kansas City, Mo.* |
| Dildine, Arthur, D. D. S., | Cheney. |
| Ernest, George C. H., A. B., | *Hubbell, Neb.* |
| Gatch, Stanley Herschel, | Kansas City. |
| Griffith, Abram Comingo, | *Kansas City, Mo.* |
| Hamilton, Howard Albert, A. B., | *Parkville, Mo.* |
| Heidrick, Daniel Lawrence, | Madison. |
| Henderson, Ralph Cambern, M. D. (1899), | Erie. |
| Hill, Jesse Newton, | *Kansas City, Mo.* |
| Howell, Thomas Freeman, | *Creed, Colo.* |
| Hummer, Frederick Antonio, | *Kansas City, Mo.* |
| Hutton, Morris Clifford, | Kansas City. |
| Johnson, Harry Hinds, | *Wayland, Mich.* |

King, Herbert Riley, . . . . . *Jasper, Mo.*
Kuhn, Harold Philip, A. B., . . . . *Kansas City, Mo.*
Lose, Fred D., . . . . . Madison.
Lucas, Dale, . . . . . Hillsdale.
Mahan, Horace Porter, . . . . . Mineral.
Markley, William Franklin, . . . . Kansas City.
McConnell, James Allen, . . . . . Rosedale.
McCully, James, . . . . . Kansas City.
McGaughey, Hugh Duncan, . . . . Jewell.
McKinley, Charles, . . . . . Independence.
Miller, Mohler Jacob, . . . . . McPherson.
Nesselrode, Clifford C., . . . . . Lenexa.
Prouse, Theodore Allen, . . . . . *Kansas City, Mo.*
Roberts, Melvin Bradford, . . . . Kansas City.
Rose, John Henry, . . . . . Osawatomie.
Russell, Guy Jewell, . . . . . Kansas City.
Schultz, Claude Lee, . . . . . Caney.
Shaw, Frederick William, . . . . Kansas City.
Sherrard, Grover Cleveland, . . . . Republic City.
Sherrard, Milton B., . . . . . Republic City.
Slaybaugh, Charles Nelson, . . . . *Kansas City, Mo.*
Smith, Ronald Robertson, . . . . . Wamego.
Sparr, Ernest Earle, . . . . . Conway Springs.
Staples, John Henry Lee, . . . . *Nelson, Mo.*
Sterrett, Herbert David, M. D. (1899), . Norcatur.
Stewart, John Hardin, . . . . . *Exeter, Ill.*
Stump, Claude Earle, . . . . . *Kildare, Okla.*
Tyree, Fred Charles, . . . . . *Carthage, Mo.*
Weiss, Albert John, . . . . . Sabetha.
Wilhelm, Francis Elmer, . . . . . Winchester.
Worrall, Benjamin Ward Jefferson, . . *Kansas City, Mo.*

Fourth year, 63.

## THIRD YEAR.

Barker, Frederick Calaway, . . . . . *Crescent, Okla.*
Blachly, Charles Dallas, . . . . . Leonardville.
Blum, Armor Harold, . . . . . Kansas City.
Clendenning, Logan, . . . . . *Kansas City, Mo.*
Fisher, Lewis Shepard, . . . . . Merriam.
Fox, Raymond H., . . . . . Caldwell.
Francisco, Clarence B., . . . . . Lawrence.
Garton, Avery Mortimer, . . . . . *Sedalia, Mo.*
Gibson, Charles M., A. B., . . . . Pittsburg.
Gray, Albert Newton, . . . . . McPherson.

Henderson, Edward Emmett, D. O., . . . *Centerville, Iowa.*
Iliff, Winfred Harold, . . . . . Kansas City.
Kiehl, Otto B., . . . . . Weir.
Lemmon, Henson Bowling, jr., . . . Kansas City.
McBurney, Charles Hamilton, . . . . *Custer City, Okla.*
McDermott, Joseph Lewis, B. S., . . . Kansas City.
McKeehan, Lyman Prentice, . . . . Kansas City.
Mills, Frank Arthur, . . . . . Osborne.
Phillips, Benjamin Lane, . . . . . Wellsville.
Regier, Henry L., . . . . . Newton.
Sanders, Clarence Elmer, . . . . . Merriam.
Schaeffer, Frank, . . . . . Oskaloosa.
Shy, David Emory, . . . . . *Knobnoster, Mo.*
Simpson, Lester Isaac, . . . . . *Weston, Mo.*
Smith, Arthur Ernest, . . . . . Kansas City.
Staples, William Carroll, . . . . . *Nelson, Mo.*
Stricklen, Harve Marion, . . . . . *Kildare, Okla.*
Tolle, Cecil Elbert, . . . . . *Kansas City, Mo.*
Troje, Oscar R., . . . . . *Kansas City, Mo.*

Third year, 29.

SECOND YEAR.

Adams, Samuel, A. B., . . . . . Topeka.
Alford, Joseph Savage, . . . . . Lawrence.
Bailer, Lloyd, . . . . . Kansas City.
Chaney, Everett B., A. B., . . . . Independence.
Coryell, John Ralph, . . . . . Junction City.
Cross, Roy, A. B., . . . . . Ellis.
Dingus, John Orum, . . . . . Mound City.
English, Carlos C., . . . . . Emporia.
Feild, Albert, . . . . . Paola.
Greene, Marie A., A. B., . . . . . Topeka.
Harrington, George Leonard, . . . . *Independence, Mo.*
Harvey, Clarence, . . . . . Salina.
Hobson, George Henry, . . . . . Kansas City.
Leonard, Homer O., . . . . . *Kansas City, Mo.*
Miller, Henry B., . . . . . Rossville.
O'Malley, Edward Francis, . . . . Gypsum.
Orcutt, Edna Edgerton, . . . . . *Kansas City, Mo.*
Robinson, David B., . . . . . Lawrence.
Sargent, John Gibson, . . . . . McPherson.
Sellers, Claude Lucullus, . . . . . Osawatomie.
Taylor, Fletcher Burr, . . . . . De Soto.
Thomas, William George, . . . . . *Scottdale, Pa.*

| | |
|---|---|
| Townsend, Benjamin I., | Aurora. |
| Walker, Thomas Henry, | Haddam. |
| Williams, John T., A. B., | *Frankfort, Ky.* |

Second year, 25.

FIRST YEAR.

| | |
|---|---|
| Albaugh, Clarence J., | Kingman. |
| Andrews, Laurin Lundy, | Solomon. |
| Bartholow, J. Wharton, | Williamsburg. |
| Bigelow, Oliver, | Lawrence. |
| Bousfield, Midian Othello, | Kansas City. |
| Brawley, Mark Abernathy, | Frankfort. |
| Bull, Raymond Cooley, | *Cameron, Mo.* |
| Carter, John Basil, | Howard. |
| Clark, Earl Finley, | Overbrook. |
| Davis, Brett, | Independence. |
| Ekblad, Victor Emanuel, | Cleburne. |
| Engle, Earl William, | Topeka. |
| Everingham, J. Sumner, | Topeka. |
| Foot, Austin Alfred, | Clay Center. |
| Gentry, Ernest Robert, A. B., | Minneapolis. |
| Getty, Carol, | Ellsworth. |
| Goddard, Brock, | Leavenworth. |
| Goldman, Paul Louis, | *Kansas City, Mo.* |
| Gregg, Ernest, | Lawrence. |
| Hamill, Claude Emmett, A. B., | Lawrence. |
| Johnson, Clifford Park, | Coffeyville. |
| Larson, Joseph Emanuel, | Ottawa. |
| Lindsey, Walter William, | Baxter Springs. |
| Marder, Mortimer, | Kansas City. |
| McManis, Jay Wilbur, | *West Union, Ohio.* |
| Nugent, Goldwin Inch, | *Briggs Corner, Canada.* |
| Palmer, William Robert, | Fall River. |
| Poutre, Fred Gerald, | Greenleaf. |
| Relihan, Harry, | Smith Center. |
| Riney, Fred Harold, | Dodge City. |
| Rumsey, Fred Crosby, | Vinland. |
| Saunders, George Clayton, | Phillipsburg. |
| Siler, Charles A., | Lawrence. |
| Troup, Ronald M., | Kansas City. |
| Van Atta, John Robert, | Beloit. |
| Ward, Benjamin R., | Minneapolis. |
| Wohler, Paul Reinbold, | Sylvan Grove. |

First year, 37.

SPECIALS.

| | |
|---|---|
| Case, Claude Houston, | Kansas City. |
| Hollis, James Arthur, | Delphos. |
| Pattison, John F., | *Oelwein, Iowa.* |
| Pearson, Walter Jay, | Kansas City. |

Specials, 4.

## The Summer Session.

Adams, James Homer, *English*, . . . Lawrence.
Alford, Joseph Savage, *Chemistry*, . . Lawrence.
Alford, Kate, *Voice*, . . . . . Lawrence.
Apollo, Julius Otto, *Chemistry*, . . . Fredonia.
Arthur, Frank Cadden, *Physics*, . . . Galena.
Bailey, William Hotchkiss, *Chemistry*, . Lawrence.
Barr, Russell Orin, *Drawing*, . . . Waverly.
Barrows, Raymond A., *German*, . . . Junction City.
Barton, Ray Collins, *Chemistry*, . . . Lawrence.
Beery, Carrie, *Latin*, . . . . . Centralia.
Bell, Mrs. Olin, *Organ*, . . . . . Lawrence.
Berry, Hazel Norris, *English*, . . . Waterville.
Bevier, Patience, *English*, . . . . Topeka.
Bigham, Alvin, *Chemistry*, . . . . Topeka.
Bisset, Charles, *Sociology*, . . . . Holton.
Block, John Lee, *Botany*, . . . . Lawrence.
Blood, John Winter, *Law*, . . . . Toronto.
Bowden, Bessie, *Harmony*, . . . . Lawrence.
Boyles, Grace, *Voice*, . . . . . Lecompton.
Brock, Ivy Grace, *Drawing*, . . . . Lawrence.
Broderson, Harry P., *Mathematics*, . . Ottawa.
Brown, John William, *Law*, . . . . Neodesha.
Brown, Waitman W., *Chemistry*, . . . Lawrence.
Bullimore, Richard, *German*, . . . . Washington.
Bunton, Lillian E., *Botany*, . . . . Lawrence.
Burns, Ira Burton, *History*, . . . . Delphos.
Campbell, Blanche, *Piano*, . . . . *Tonkawa, Okla.*
Canaday, Minne, *English*, . . . . Oswego.
Canty, Miles Emmett, *Law*, . . . . Buffalo.
Cardwell, Della Dorothy, *English*, . . St. John.
Carpenter, Edna Adelia, *Botany*, . . . Yates Center.
Carr, Clara May, *English*, . . . . Leavenworth.
Carter, George S., *English*, . . . . Marysville.
Carter, John B., *Chemistry*, . . . . Howard.
Chambers, Mabel, *French*, . . . . Topeka.
Chapin, Charles Walter, *Mathematics*, . Council Grove.
Chapman, Ethel, *English*, . . . . Topeka.
Chapman, Inez Maud, *German*, . . . Glasco.
Childress, John Morton, *Law*, . . . Arkansas City.

Clarke, Adna G., *Mathematics*, . . . Lawrence.
Clarke, Helen M., *English*, . . . . Lawrence.
Clarkson, William T., *Sociology*, . . . Lawrence.
Cleland, Sadie, *Law*, . . . . . Lawrence.
Clevenger, Elda, *Harmony*, . . . . Lawrence.
Collier, Capitola, *Drawing*, . . . . Liberal.
Collins, Olive, *Spanish*, . . . . . Lawrence.
Commons, Clyde, *Sociology*, . . . . Fort Scott.
Cone, Margaret, *Piano*, . . . . . Lawrence.
Cooper, Lawrence, *English*, . . . . Lawrence.
Cope, Alfred B., *History*, . . . . Ozawkie.
Corkill, Charles Kneale, *Sociology*, . . Lawrence.
Cortelyou, Frank, *Mathematics*, . . . Muscotah.
Craig, Ethel, *Voice*, . . . . . Lawrence.
Crew, Catherine, *French*, . . . . Lawrence.
Detwiler, Mrs. H. E., *Piano*, . . . . Ottawa.
Dick, Gertrude Agnes, *Sociology*, . . . Topeka.
Dickson, James, *Mathematics*, . . . Lawrence.
Dillard, Mary Jane, *English*, . . . . Lawrence.
Douglas, William, *Law*, . . . . . Cherryvale.
Duvall, Lot Monroe, *Botany*, . . . . Colby.
Easter, Grace Marie, *Spanish*, . . . Burlingame.
Edenburg, Frank, *Physics, Chemistry*, . Lindsborg.
Edgerton, Oliver Paul, *German*, . . . Randolph.
Elder, William Henry, *Law*, . . . . Lawrence.
Emmett, Eveline, *English*, . . . . Lawrence.
English, Carlos C., *Chemistry*, . . . Cimarron.
Eyerly, Tema Le Clerc, *Geology*, . . . Marysville.
Farmer, Georgia, *Piano*, . . . . . Lawrence.
Fitch, Louise, *Piano*, . . . . . Lawrence.
Freeman, Eli Charles, *French*, . . . Manhattan.
Gallup, Ralph F., *Mathematics*, . . . Blue Rapids.
Gardner, May, *Spanish*, . . . . . Lawrence.
Garrett, Mayme, *Harmony*, . . . . Lawrence.
Gephart, Frank, *Geology*, . . . . . Oskaloosa.
Gilson, Helen, *Piano*, . . . . . Lawrence.
Glenn, Pressley Adams, *Botany*, . . . Highland.
Goodwin, Edith A., *Chemistry*, . . . Detroit.
Gordon, Bert E., *Mathematics*, . . . Fort Scott.
Gorrill, Mrs. M. A., *Voice*, . . . . Lawrence.
Gowans, Ralph, *English*, . . . . . Lawrence.
Grant, Grace Fannie, *Mathematics*, . . Osage City.
Green, Edith, *English*, . . . . . Kansas City.

Griffin, Edith, *Spanish*, . . . . . Lawrence.
Hall, Earl Connell, *Drawing*, . . . . Horton.
Hall, Justus Otho, *Education*, . . . Horton.
Haney, Edward E., *Law*, . . . . . Fontana.
Hanselman, Cloyd Brass, *Piano*, . . . Lawrence.
Harris, Annie Gardner, *Spanish*, . . . Lawrence.
Hart, Harry, *English*, . . . . . Beloit.
Harvey, John King, *French*, . . . . Salina.
Haskett, Ivy, *English*, . . . . . Concordia.
Heard, Walter Lewis, *Law*, . . . . Arkansas City.
Heter, Wylie, *Mathematics*, . . . . Sterling.
Hiatt, George Robinson, *Botany*, . . . Garnett.
Hibbard, Ida May, *Mathematics*, . . . Wellington.
Hines, Charles Robinson, *Chemistry*, . . Kinsley.
Hixson, Arthur W., *Mathematics*, . . Hiawatha.
Hoar, Ethel, *Education*, . . . . . Lawrence.
Hooper, Thomas Henry, *Geology*, . . . Smith Center.
Hoover, Roy William, *Sociology*, . . . Mahaska.
Hopkins, George Joy, *Mathematics*, . . Lawrence.
Hosford, Katherine, *English*, . . . . Lawrence.
Hoskins, Elsie, *Sociology*, . . . . Lawrence.
Hoskins, Roy Graham, *Chemistry*, . . Lawrence.
Houghton, Katherine Olive, *Mathematics*, . Cottonwood Falls.
Howell, Thomas Freeman, *Chemistry*, . Kansas City.
Hutchings, Rose Lily, *Chemistry*, . . . Ottawa.
Ise, Charles Daniel, *Geology*, . . . . Downs.
Jennings, Charles William, *Law*, . . . Kansas City.
Johnson, Bundy William, *Law*, . . . Clay Center.
Johnson, Ralph Charles, *History*, . . . Cottonwood Falls.
Kennedy, Actea Resing, *Mathematics*, . Topeka.
Kent, Mabel, *Education*, . . . . . Lawrence.
Kent, Mattie, *History*, . . . . . Lawrence.
Kiefer, Norman Wellington, *German*, . . Lawrence.
King, Mary Lenora, *Latin*, . . . . Pekin.
Knott, Joseph Israel, *Physics*, . . . Yates Center.
Laird, Paul E., *Botany, Am. Literature*, . Argentine.
Landrum, Claude Gresham, *Education*, . Lawrence.
Lee, Stephen Earl, *Law*, . . . . . Gove City.
Lemmon, Lura Lee, *Latin*, . . . . *Warrensburg, Mo.*
Leonard, Alice, *Organ*, . . . . . Lawrence.
Leonard, Annette, *History*, . . . . Lawrence.
Leslie, Elizabeth, *Drawing*, . . . . Lawrence.
Lofty, John, *Botany*, . . . . . Salina.

Logan, Spencer R., *Geology*, . . . . Cherryvale.
Luby, William A., *English*, . . . . *Kansas City, Mo.*
Lucas, Paralee, *English*, . . . . . Lawrence.
Maddox, Wilbur F., *Physics*, . . . . Oberlin.
Mann, Arthur Robert, *Chemistry*, . . Lawrence.
Marks, Adele, *Voice*, . . . . . Lawrence.
Martin, Evelyn R., *English*, . . . . Kansas City.
Mayberry, James W., *Chemistry*, . . . *Edmond, Okla.*
Mayfield, William Madison, *Sociology*, . . Lansing.
Miller, Grace Clara, *German*, . . . . Tonganoxie.
Mitchell, Hannah, *Voice*, . . . . . Lawrence.
Mitchell, Ulysses Grant, *History*, . . . Lawrence.
Moon, Virgil Holland, *Chemistry*, . . . Marquette.
Moore, Jennie M., *Piano*, . . . . . Lawrence.
Morris, Clara, *English*, . . . . . Marion.
Morris, Melvina Genoa, *Drawing*, . . . Holton.
Morton, Gertrude, *English*, . . . . Topeka.
Mulvihill, Celia, *Education*, . . . . Lawrence.
Museller, Crete, *German*, . . . . . *Alva, Okla.*
McCanles, Wendell Windom, *English*, . . Lincoln.
McCormick, Ross Clinton, *Law*, . . . Phillipsburg.
McCrary, Donald Everett, *Botany*, . . Emporia.
McCroskey, Orrell, *German*, . . . . Halstead.
McDermott, Joseph L., *Chemistry*, . . Rosedale.
McKoin, Mabel, *Organ*, . . . . . Lawrence.
Neff, Paul J., *Chemistry*, . . . . . Lawrence.
Nicholson, Estelle, *French*, . . . . Wichita.
Nickles, Jennie E., *Education, Spanish*, . Hays.
Noel, Elmer, *Mathematics*, . . . . Pittsburg.
Noyes, Edward N., *Chemistry*, . . . Lawrence.
Olin, Charlotte, *Education*, . . . . Lawrence.
Organ, Frank, *Law*, . . . . . Howard.
Orr, Robert Ellis, *Mathematics*, . . . Winfield.
Payne, Grace Lois, *German*, . . . . Horton.
Pearson, Clarence, *Education*, . . . Lawrence.
Pennington, Celia, *Drawing, Botany*, . . Lawrence.
Pingry, C. Oscar, *Law*, . . . . . Pittsburg.
Pitcher, Arthur Dunn, *Education*, . . . Havensville.
Plummer, Clara Elizabeth, *Mathematics*, . Topeka.
Poehler, Alma, *Harmony*, . . . . . Lawrence.
Pryor, Erla, *Harmony*, . . . . . Lawrence.
Reid, Jennie, *French*, . . . . . Lawrence.
Renn, Lula, *Education*, . . . . . Wellington.

Reynolds, Jessie Annaberta, *French*, . . Manhattan.
Rhodes, Benjamin Franklin, *History*, . . Winfield.
Richards, Aute, *German*, . . . . . Lawrence.
Riley, Roy W., *Chemistry*, . . . . Wichita.
Robertson, W. Rees B., *English*, . . . Manchester.
Robinson, Wilma Adell, *Piano*, . . . Lawrence.
Rohrer, Christian A., *Physics*, . . . Kansas City.
Roller, Harry F., *Sociology*, . . . . Lecompton.
Rose, Harry James, *Chemistry*, . . . Atchison.
Rude, Cordelia, *English*, . . . . . *Enid, Okla.*
Ryan, Bessie G., *German*, . . . . Cherryvale.
Sargent, John Gibson, *Chemistry*, . . . Lawrence.
Shafer, Annie Neil, *Latin*, . . . . Olathe.
Sheedy, Dennis Joseph, *Law*, . . . . Fredonia.
Shirk, James A. G., *Chemistry*, . . . McPherson.
Siler, Charles A., *Physics*, . . . . Lawrence.
Simmons, Henry E., *History*, . . . . Severance.
Skofstad, Oscar James, *Chemistry*, . . Lawrence.
Smith, Harriett, *Drawing*,, . . . . Colby.
Smith, Helen, *Voice*, . . . . . Lawrence.
Smith, Helen Beach, *English*, . . . . Nickerson.
Smith, Henry H., *Mathematics*, . . . Stockton.
Snyder, Frances Irene, *German*, . . . Sterling.
Spray, Lester, *Piano*, . . . . . Lawrence.
Starin, William Alfred, *Physics*, . . . Netawaka.
Steen, William Orlando, *History*, . . . Ottawa.
Steeper, Tinsley, *German*, . . . . McLouth.
Stegeman, Amel, *Physics*, . . . . Hope.
Stelter, Benjamin Franklin, *Education*, . Lawrence.
Stevens, Vera, *Botany*, . . . . . Lawrence.
Stichter, Charl, *Law*, . . . . . Lawrence.
Stone, Rosalia Rachel, *English, Mathematics*, Walton.
Stone, Sadie, *English*, . . . . . Lawrence.
Strawn, William B., *History*, . . . . Columbus.
Sutton, Joseph Henry, *Law*, . . . . Harris.
Swan, Asa Theodore, *Law*, . . . . Pittsburg.
Taylor, Thomas Chalmers, jr., *Law*, . . Lawrence.
Thestrup, A. Charlotta, *Chemistry*, . . Williamsburg.
Thestrup, Grace Elizabeth, *Mathematics*, . Williamsburg.
Thiele, Ernest, *Mathematics*, . . . . Washington.
Thaman, Hazel, *Piano*, . . . . . Parsons.
Thompson, Martha, *German*, . . . . Kansas City.
Tredick, George C., *Chemistry*, . . . Kingman.

Uhrlaub, Agnes, *Piano*, . . . . . Lawrence.
Unruh, Agnes, *English*, . . . . . Larned.
Van Arsdale, John, *Mathematics*, . . . Dighton.
Van Fleet, Charles L., *English*, . . . Lawrence.
Veeh, Mary Augusta, *Sociology*, . . . Stuttgart.
Vinson, A. G., . . . . . *Alva, Okla.*
Walker, Charles Neville, *Sociology*, . . Kansas City.
Wallace, May, *Chemistry*, . . . . Lawrence.
Warren, Luella, *English*, . . . . . Hutchinson.
Watson, Elsie Belle, *Piano*, . . . . Lawrence.
Weatherby, Le Roy S., *Sociology*, . . Lawrence.
Whitelaw, Roy Smith, *Geology*, . . . Garden Plain.
Wierenga, Henry George, *History*, . . Cawker City.
Wilson, Hill P., jr., *Chemistry*, . . . Lawrence.
Winnagle, Roscoe, *Law*, . . . . . Lawrence.
Winship, Florence Eugenia, *Education*, . Lawrence.
Wolcott, Grace, *Drawing*, . . . . Lawrence.
Wolcott, Grace, *German*, . . . . . Topeka.
Woodhead, Madge, *Latin*, . . . . Lawrence.
Woodward, Harriet, *Botany*, . . . . Boling.
Wright, Cowles, *German*, . . . . Arkansas City.

Summer Session, 232.

# Summary of Enrolment.
## 1905-'06.

| DEPARTMENTS. | *Men.* | *Women.* | *Total.* |
|---|---|---|---|
| **The Graduate School** | **54** | **36** | **90** |
| **The College of Liberal Arts and Sciences** | **355** | **359** | **714** |
| Senior Class | 54 | 72 | 126 |
| Junior Class | 41 | 55 | 96 |
| Sophomore Class | 68 | 67 | 135 |
| Freshman Class | 128 | 109 | 238 |
| Special Students | 64 | 56 | 120 |
| **The School of Engineering** | **378** | **1** | **379** |
| Senior Class | 33 | ..... | 33 |
| Junior Class | 43 | ..... | 43 |
| Sophomore Class | 93 | ..... | 93 |
| Freshman Class | 182 | ..... | 182 |
| Special Students | 17 | 1 | 18 |
| Unclassified | 10 | ..... | 10 |
| **The School of Fine Arts** | **18** | **149** | **167** |
| Graduate Students | ..... | 7 | 7 |
| Senior Class | ..... | 7 | 7 |
| Junior Class | ..... | 10 | 10 |
| Sophomore Class | 2 | 13 | 15 |
| Freshman Class | 2 | 24 | 26 |
| Special Students | 14 | 88 | 102 |
| **The School of Law** | **136** | **3** | **139** |
| Senior Class | 33 | 1 | 34 |
| Middle Class | 36 | ..... | 36 |
| Junior Class | 55 | 2 | 57 |
| Special Students | 12 | ..... | 12 |
| **The School of Pharmacy** | **56** | **8** | **64** |
| Senior Class | 12 | 4 | 16 |
| Junior Class | 32 | 3 | 35 |
| Sophomore Class | 6 | 1 | 7 |
| Special Students | 6 | ..... | 6 |
| **The School of Medicine** | **157** | **5** | **162** |
| Graduate Students | 3 | 1 | 4 |
| Fourth-year Class | 61 | 2 | 63 |
| Third-year Class | 29 | ..... | 29 |
| Second-year Class | 23 | 2 | 25 |
| First-year Class | 37 | ..... | 37 |
| Special Students | 4 | ..... | 4 |
| **The Summer Session** | **125** | **107** | **232** |
| Graduate Students | 14 | 20 | 34 |
| Undergraduate Students | 111 | 87 | 198 |
| Total enrolment in all the schools | 1,279 | 668 | 1,947 |
| Names counted twice | 155 | 86 | 241 |
| **Total registration, 1905-'06** | **1,124** | **582** | **1,706** |

# Classification of Students.

## By Kansas Counties.

| | | | | | |
|---|---|---|---|---|---|
| Allen | 25 | Greenwood | 9 | Pawnee | 6 |
| Anderson | 13 | Harper | 7 | Phillips | 5 |
| Atchison | 14 | Harvey | 19 | Pottawatomie | 15 |
| Barber | 4 | Jackson | 8 | Pratt | 4 |
| Barton | 6 | Jefferson | 16 | Reno | 15 |
| Bourbon | 29 | Jewell | 9 | Republic | 15 |
| Brown | 31 | Johnson | 27 | Rice | 12 |
| Butler | 12 | Kingman | 8 | Riley | 3 |
| Chase | 3 | Kiowa | 3 | Rooks | 8 |
| Chautauqua | 1 | Labette | 21 | Rush | 5 |
| Clark | 2 | Leavenworth | 43 | Russell | 1 |
| Clay | 18 | Lincoln | 6 | Saline | 14 |
| Cloud | 12 | Linn | 13 | Scott | 1 |
| Crawford | 33 | Logan | 1 | Sedgwick | 28 |
| Cherokee | 20 | Lyon | 22 | Seward | 1 |
| Coffey | 6 | Marion | 12 | Shawnee | 44 |
| Cowley | 21 | Marshall | 23 | Sheridan | 1 |
| Decatur | 7 | McPherson | 23 | Smith | 10 |
| Dickinson | 27 | Meade | 2 | Stafford | 4 |
| Doniphan | 14 | Miami | 24 | Stanton | 1 |
| Douglas* | 368 | Mitchell | 16 | Sumner | 34 |
| Edwards | 5 | Montgomery | 43 | Thomas | 2 |
| Elk | 5 | Morris | 5 | Trego | 9 |
| Ellis | 8 | Neosho | 23 | Wabaunsee | 2 |
| Ellsworth | 12 | Nemaha | 17 | Wallace | 1 |
| Finney | 3 | Ness | 1 | Washington | 12 |
| Ford | 4 | Norton | 6 | Wilson | 23 |
| Franklin | 15 | Osage | 21 | Woodson | 6 |
| Geary | 8 | Osborne | 6 | Wyandotte | 84 |
| Gove | 3 | Ottawa | 21 | | |

* A large number of students whose names appear in this catalogue as residents of Douglas county are so catalogued because they temporarily reside in Lawrence for the purpose of attending the University.

## Classification by States.

| | | | |
|---|---|---|---|
| Arizona Territory | 1 | Missouri | 99 |
| Canada | 1 | Nebraska | 2 |
| Colorado | 6 | New Mexico | 3 |
| Illinois | 4 | New York | 3 |
| Indian Territory | 1 | Ohio | 6 |
| Iowa | 2 | Oklahoma Territory | 19 |
| Japan | 2 | Pennsylvania | 1 |
| Kansas | 1,550 | Virginia | 1 |
| Kentucky | 1 | Washington | 1 |
| Michigan | 3 | Total | 1,706 |

# Acknowledgments.

## Gifts to the Library, March, 1905, to March, 1906.

| | *Vols.* |
|---|---|
| Adams, Edward D., New York city | 2 |
| Adjutant-general of Kansas, Topeka | 1 |
| American Bar Association | 2 |
| American Museum of Natural History, New York city | 1 |
| American Pharmaceutical Association | 1 |
| Blackmar, Prof. F. W., Lawrence | 23 |
| Brown, Miss Sarah A., Lawrence | 46 |
| Carnegie Institution, of Washington, D. C. | 2 |
| Christian Science Society, of Lawrence | 1 |
| Department of History and Archives of Mississippi | 4 |
| Dodd, Mead & Co., New York city | 1 |
| Fowler, A., New York city | 1 |
| Griffin, Mrs. Mary A., Tokio, Japan | 6 |
| Historical Department of Iowa | 1 |
| Hodder, Prof. F. H., Lawrence | 8 |
| Howland, Mrs. M. G., Lawrence | 2 |
| Jones, F. A., Albuquerque, N. M. | 1 |
| Kansas City Lodge No. 184, Independent Order of B'nai B'rith | 11 |
| Kansas State Library, Topeka | 1 |
| Leigh, Dr. A., Hiawatha | 239 |
| Library of Congress, Washington, D. C. | 8 |
| Lowell Observatory, Flagstaff, Ariz. | 1 |
| Manning, W. R., West Lafayette, Ind. | 1 |
| Merk & Co., New York city | 7 |
| Missouri Botanical Garden, St. Louis | 1 |
| Newson, Prof. H. B., Lawrence | 1 |
| Ohio Geological Survey, Columbus, Ohio | 1 |
| Osborn, H. F., New York city | 1 |
| Remington, J. P., Philadelphia | 1 |
| Secretary of State, Topeka | 3 |
| Smith, Mrs., and Cotton, Mrs., Sedalia, Mo. | 1 |
| Smithsonian Institution, Washington, D. C. | 1 |
| State Board of Agriculture, Topeka | 1 |
| State Historian, Albany, N. Y. | 1 |
| United States Civil Service Commission | 1 |
| United States Department of Agriculture | 5 |
| United States Department of Commerce and Labor | 1 |
| United States Department of State | 1 |
| United States Superintendent of Documents | 1 |
| University of Chicago | 3 |
| Williams, Miss May, Osawatomie | 1 |
| Williams College, Williamstown, Mass. | 1 |

## NEWSPAPERS AND PERIODICALS.

Given by publishers, unless otherwise indicated.

### DAILIES.

| | |
|---|---|
| Abilene Daily Reflector | Abilene. |
| Daily Republican | Fort Scott. |
| Emporia Gazette | Emporia. |
| Fort Scott Daily Tribune and Monitor | Fort Scott. |
| Hutchinson News | Hutchinson. |
| Independence Daily Reflector | Independence. |
| Iola Daily Register | Iola. |
| Kansas City Journal | Kansas City, Mo. |
| Kansas City World | Kansas City, Mo. |
| Lawrence Daily Gazette | Lawrence. |
| Lawrence Daily Journal | Lawrence. |
| Lawrence Daily World | Lawrence. |
| McPherson Daily Republican | McPherson. |
| Newton Evening Kansas-Republican | Newton. |
| Parsons Sun | Parsons. |
| Salina Evening Journal | Salina. |
| Topeka Capital | Topeka. |
| Topeka Daily Herald | Topeka. |
| Topeka State Journal | Topeka. |

### WEEKLIES.

| | |
|---|---|
| Abilene Democrat | Abilene. |
| (Abilene) Dickinson County News | Abilene. |
| Abilene Weekly Chronicle | Abilene. |
| Alma Enterprise | Alma. |
| Altamont Journal | Altamont. |
| Anthony Republican | Anthony. |
| Atchison Weekly Globe | Atchison. |
| Barber County Democrat | Great Bend. |
| Barber County Index | Medicine Lodge. |
| Baxter Springs News | Baxter Springs. |
| Belle Plaine News | Belle Plaine. |
| Belleville Freeman | Belleville. |
| Belleville Telescope | Belleville. |
| Beloit Gazette | Beloit. |
| Beloit Times | Beloit. |
| Better Way | Minneapolis. |
| Blue Mound Sun | Blue Mound. |
| Bison Bee | Bison. |
| Breeder's Gazette | Chicago, Ill. |
| Brown County World | Hiawatha. |
| Burlington Independent | Burlington. |
| Burlington Republican | Burlington. |
| Caney Chronicle | Caney. |
| Cawker City Ledger | Cawker City. |
| Central Kansas Democrat | Lyons. |
| Centerville Courier | Centerville. |
| Chapman Advertiser | Chapman. |
| Chase Register | Chase. |
| Chase County Leader | Cottonwood Falls. |
| Christian Register | Boston, Mass. |

Clark County Clipper ..... Ashland.
Clay Center Dispatch ..... Clay Center.
Clay Center Times ..... Clay Center.
Coffeyville Record ..... Coffeyville.
Columbus Advocate ..... Columbus.
Commoner ..... Lincoln, Neb.
Conway Springs Star ..... Conway Springs.
Council Grove Republican ..... Council Grove.
Comet ..... Courtland.
Courier-Democrat ..... Seneca.
Democrat ..... McPherson.
De Soto Eagle Eye ..... De Soto.
El Dorado Republican ..... El Dorado.
Elk County Citizen ..... Howard.
Ellsworth Messenger ..... Ellsworth.
Emporia Republican ..... Emporia.
Erie Record ..... Erie.
Eudora News ..... Eudora.
Eureka Herald ..... Eureka.
Fairview Enterprise ..... Fairview.
Fredonia Herald ..... Fredonia.
Fort Leavenworth Herald ..... Fort Leavenworth.
Galena Republican ..... Galena.
Garnett Journal ..... Garnett.
Glasco Sun ..... Glasco.
Globe ..... Meade.
Grant County Republican ..... Ulysses.
Grand Rapids Times ..... Grand Rapids.
Great Bend Register ..... Great Bend.
Haddam City Clipper ..... Haddam.
Herald of Gospel Liberty ..... Dayton, Ohio.
Holton Recorder ..... Holton.
Holton Signal ..... Holton.
Howard Courant ..... Howard.
Humboldt Herald (semiweekly) ..... Humboldt.
Illustrated London News (Mrs. T. H. Chalkley, Lawrence), London, England.
Independent ..... Wa Keeney.
Independent News ..... Girard.
Irving Leader ..... Irving.
Jetmore Republican ..... Jetmore.
Jewell County Advertiser ..... Mankato.
Junction City Union ..... Junction City.
Kansas Agitator ..... Garnett.
Kansas American ..... McPherson.
Kansas Democrat ..... Hiawatha.
Kansas Farmer ..... Topeka.
Kansas Standard ..... La Cygne.
Kansas Star ..... Olathe.
Kingman Journal ..... Kingman.
Kiowa County Signal ..... Greensburg.
Kiowa News Review ..... Kiowa.
La Cygne Weekly Journal ..... La Cygne.
Larned Weekly Chronoscope ..... Larned.

| | |
|---|---|
| Lawrence Germania | Lawrence. |
| Lindsborg News | Lindsborg. |
| Linn County Republic | Mound City. |
| Live Stock Farmer | Dodge City. |
| Logan Republican | Logan. |
| Long Island New Leaf | Long Island. |
| Lyons Republican | Lyons. |
| Lyndon Record | Lyndon. |
| Mail and Breeze | Topeka. |
| Manhattan Mercury | Manhattan. |
| Manhattan Nationalist | Manhattan. |
| Marion Record | Marion. |
| Marshall County News | Marysville. |
| Messenger | Smith Center. |
| Miami Republican | Paola. |
| Minneapolis Messenger | Minneapolis. |
| Monitor Press | Wellington. |
| Mound Valley Herald | Mound Valley. |
| Neodesha Register | Neodesha. |
| Ness County News | Ness City. |
| New Era | Formosa. |
| New Voice | Chicago, Ill. |
| Norton Courier | Norton. |
| Oakley Graphic | Oakley. |
| Olathe Mirror | Olathe. |
| Olathe Republican Tribune | Olathe. |
| Osage City Free Press | Osage City. |
| Osawatomie Graphic | Osawatomie. |
| Osborne County Farmer | Osborne. |
| Ottawa Independent | Ottawa. |
| Ottawa Weekly Herald | Ottawa. |
| Paola Times | Paola. |
| People's Voice | Wellington. |
| Phillipsburg Herald | Phillipsburg. |
| Plainville Times | Plainville. |
| Pleasanton Observer | Pleasanton. |
| Pratt Union | Pratt. |
| Press | Kansas City, Kan. |
| Progress | Minneapolis. |
| Public (E. E. Soderstrom, Emporia) | Chicago, Ill. |
| Public Opinion | Osage City. |
| Randolph Enterprise | Randolph. |
| Record | Russell. |
| Republic City News | Republic City. |
| Republican Record | Hays City. |
| Rice County Eagle | Lyons. |
| Robinson Index | Robinson. |
| Rooks County Republican | Stockton. |
| Rush City Breeze | Rush Center. |
| Sabetha Star | Sabetha. |
| Salina Union | Salina. |
| Salina Weekly Journal | Salina. |
| Smith County Pioneer | Smith Center. |
| Stafford Courier | Stafford. |

| | |
|---|---|
| Sterling Kansas Bulletin | Sterling. |
| St. Marys Journal | St. Marys. |
| St. Paul Journal | St. Paul. |
| Seneca Courier-Democrat | Seneca. |
| Seneca Tribune | Seneca. |
| South Kansas Tribune | Independence. |
| Star and Kansan | Independence. |
| Torch of Liberty | Mound City. |
| United Presbyterian | Pittsburg, Pa. |
| University Record | Chicago, Ill. |
| Uniontown News | Uniontown. |
| Wamego Times | Wamego. |
| Washington Register | Washington. |
| Washington Republican | Washington. |
| Waterville Telegraph | Waterville. |
| Wathena Times | Wathena. |
| Wathena Weekly Republican | Wathena. |
| Weekly Kansas Chief | Troy. |
| Weekly News | Kansas City, Kan. |
| Weekly Review | Frankfort. |
| Weekly Sentinel | Tonganoxie. |
| Western Call | Beloit. |
| Western Life | Leavenworth. |
| Western Times | Shannon. |
| Westmoreland Record | Westmoreland. |
| Westmoreland Signal | Westmoreland. |
| Wichita Eagle | Wichita. |
| Wilson Echo | Wilson. |
| Williamsburg Star | Williamsburg. |
| Winfield Courier | Winfield. |
| Wyandotte Herald | Kansas City, Kan. |
| Valley Falls New Era | Valley Falls. |

SEMI-MONTHLIES.

| | |
|---|---|
| American Druggist and Pharmaceutical Record | New York. |
| Clay Record | Chicago, Ill. |
| Mines and Minerals | Scranton, Pa. |
| Virginia Medical Semimonthly | Richmond, Va. |
| Western Odd Fellow | Topeka. |

MONTHLIES.

| | |
|---|---|
| Advocate of Peace | Boston, Mass. |
| Architect Builder | Kansas City, Mo. |
| Christian Educator | Great Bend. |
| Electrical Trade | Chicago, Ill. |
| Good Roads Magazine | New York. |
| Hammer and Pen | New York. |
| Insurance Magazine | Kansas City, Mo. |
| Irrigation Age | Chicago, Ill. |
| Kansas City Medical Record | Kansas City, Mo. |
| Live Wire | St. Louis. |
| Meyer Bros. Druggist | St. Louis. |
| Our Dumb Animals | Boston, Mass. |
| Search Light | New York. |

School and Fireside ..... Hutchinson.
Technical World..... Chicago, Ill.
Western Drug Record..... Kansas City, Mo.
Western School Journal..... Topeka.
Valve World ..... Chicago, Ill.

QUARTERLIES.

Bulletin of the Wool Manufacturers..... Boston.
Hartford Seminary Record..... Hartford, Conn.
Single-tax Review (E. E. Soderstrom, Emporia)..... Chicago.
Transactions of the American Mathematical Society (Mrs. H. B. Newson) ..... New York.

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